

Studies in Child Development

# 11,000 Seven- Year-Olds

M. L. Kellmer Pringle  
N. R. Butler  
R. Davie



2043  
18.3.69



Studies in Child Development

## **11,000 seven-year-olds**

STUDIES IN CHILD DEVELOPMENT

*Titles in this series*

11,000 seven-year-olds

Adoption—Facts and Fallacies

Four Years On

# 11,000 seven-year-olds

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First Report of the

## **National Child Development Study**

(1958 Cohort)

submitted to the

Central Advisory Council For Education  
(England)

April 1966

Sponsored by the  
Institute of Child Health, University of London  
National Birthday Trust Fund  
National Bureau for Co-operation in Child Care  
National Foundation for Educational Research in  
England and Wales

in collaboration with the  
Association of Chief Education Officers  
(in England and Wales)  
Society of Medical Officers of Health  
Association of Directors of Education  
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•



## Foreword

This report, prepared for the Central Advisory Council for Education (England), is inevitably very much of an interim nature.

The follow through Study of the 1958 Cohort of children was not begun until October, 1964, and the task of tracing the whereabouts of 17,000 children nearly seven years after their birth, was itself immense and had to be completed substantially before the field work could begin in 1965. Not unexpectedly, the analysis of the data for this report had to commence before information on all the children had come in. Hence, the work reported here bears upon only 11,000 of the children in England and consists of relatively straightforward analyses.

It does, however, represent a considerable feat. The reader will be surprised at the width and richness of this harvest of facts—many of them barely surmised before—which have been obtained, analysed and presented in a total period of 19 months. The deadline for this report could not have been met in this way without the fullest and most rapid co-operation of the schools, the parents, the medical and social services, without the organising skill and drive of the Co-Directors and, above all, without the devotion and competence of the very small research and clerical staff assigned to the project. Particular mention should be made of the Principal Research Officer, Mr. R. Davie, and the Statistician, Mr. H. Goldstein.

The Steering Committee wishes to place on record its awareness of certain inevitable shortcomings—the absence of the more complex and powerful analyses, the fact that the references to previous literature have not all been followed up, and the marks of haste which will be apparent to the attentive reader. It also wishes to underline the achievement of the team in carrying through what to many of us experienced in these things would appear an impossible task in the time.

W. D. WALL

*Chairman of the Steering Committee*



## Acknowledgements

A project, such as the National Child Development Study, would not be possible without the help and co-operation of a large number of individuals and organisations. The sponsoring bodies of the Study, the Co-Directors, and the research team gratefully acknowledge and thank all those who have contributed to this enormous task.

The Study has been carried out with the collaboration of the Association of Chief Education Officers (in England and Wales), the Society of Medical Officers of Health and the Association of Directors of Education (in Scotland), who have throughout given their advice and support.

Acknowledgement and thanks are due to the Central Advisory Councils for Education in England and Wales and to the Scottish Education Department, who wrote to all the Local Education Authorities; and to the Ministry of Health for circularising the Local N.H.S. Executive Councils.

Assistance was kindly given by the Senior Administrative Medical Officers of the Regional Hospital Boards, the staff of the Local Health Executive Councils, and also by many Children's Officers.

The staffs of The Government Social Survey (Central Office of Information), the General Register Office, and the M.R.C. Medical Sociology Research Unit in Aberdeen have given valuable advice and assistance.

The generous co-operation of the Chief Education Officers, Principal School Medical Officers and their staffs who were concerned with the administration of the Study in each local authority is gratefully acknowledged. They are warmly thanked for all the time and attention they have given to ensure the success of the Study.

Special appreciation must also be expressed to the teachers, school medical officers, health visitors and school welfare officers in every part of England, Scotland and Wales who undertook all the interviewing, testing and examining. Without their help, indeed, the Study could not have been carried out.

The parents of the children are most warmly thanked for their co-operation and support. It is the second time that most of them have given valuable information about their children.

The sponsoring bodies, the Co-Directors and the research team are glad to be able to take this opportunity of thanking the members of the Steering Committee,



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both collectively and individually, for their invaluable and unfailing help and support; and to acknowledge and thank the organisations and their representatives on the Consultative Committee.

Acknowledgement and thanks for their interest and specialist help are due to many people, all of whom cannot be named, but among whom must be mentioned: Mr. W. B. Barrett; Dr. D. E. Cullington; Mrs. J. Davey; Dr. J. J. B. Dempster; Dr. P. A. Gardiner; Professor M. Healy; Professor R. Illsley; Miss H. J. Lewin; Miss M. Manning; Dr. I. C. Monro; Dr. J. Morris; Dr. R. C. Pearson; Mr. T. V. Pretty; Mr. A. P. Round; Professor M. Quenouille and Dr. M. Sheridan.

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Special thanks are due to the staffs of the four sponsoring bodies for all they have contributed and for their patience and competence in the face of the frequent and very heavy demands made on them.

Mention must also be made of all those temporary staff who for varying times have so enthusiastically helped with the vast amount of clerical and administrative work involved.

The University of London Press kindly supplied the Bristol Social-Adjustment Guides and the Southgate Tests at cost; and the Ames Company gave Urine Test material for all the children concerned.

# I. Introduction

The group of 7-year-old children featured in this report are part of a larger national cohort in England, Scotland and Wales. The children were the subjects of a survey at the time of their birth; and information has now been gathered on many aspects of their growth and development. It is hoped that this study of the children can be continued at intervals throughout their childhood and, perhaps, into adult life.

## A. Background to the Study

### 1. THE 1958 PERINATAL MORTALITY SURVEY

In 1958 information was gathered on some 17,000 babies born during the week, 3rd to 9th March, in England, Scotland and Wales. This Survey (Butler and Bonham, 1963), sponsored by the National Birthday Trust Fund, reviewed the administration of British maternity services and the causes of perinatal death (still births and deaths in the first week).

During the course of the investigation a vast amount of sociological and medical data were collected about the children and their families, including details of the parents' education and occupations; antenatal care; any obstetrical medical complications; the duration of the pregnancy; and the condition and weight of the babies at birth.

This cohort of children can be considered unique for a number of reasons: it was a truly national series, selected only by date of birth; the very high proportion of returns (an estimated 98 per cent of all babies born during the week in question) reduced the possibility of any bias; and the comprehensive nature of the perinatal data was unparalleled in the world for any national cohort.

### 2. THE NATIONAL CHILD DEVELOPMENT STUDY (1958 COHORT)

In 1964 the opportunity arose to trace and study these children again and the National Child Development Study (1958 Cohort) was set up for this purpose. The Study is financially supported by a grant from the

Department of Education and Science, the Home Office, and the Scottish Education Department and sponsored by the four bodies detailed at the beginning of this report; one of these bodies, the National Bureau for Co-operation in Child Care, is responsible for its administration.

The investigation is at present a 3-year project but it is hoped that it will constitute the second stage of a longitudinal study of the original 1958 cohort of children throughout their childhood and into adult life. Thus, the aims of the Study can be divided into: short-term goals relating to the present 3-year investigation; and long-term aims which depend upon continued follow-up of the children. The former may be summarised as follows:

- (a) To study the educational, behavioural, emotional, social and physical development of a large and representative group of British children in order to gather normative data; to investigate the complex inter-relationships between the many facets, both normal and deviant, of children's development; and to report the incidence of handicaps and the provision currently being made.
- (b) To utilise the uniquely comprehensive perinatal data, already available, in an evaluation of the relationships between conditions during pregnancy and at birth, both medical and social, and the development of children in all its aspects at the age of 7 years. From this investigation it is hoped amongst other things to determine some of the factors at birth which place children 'at risk' of developing handicapping conditions. Such information should permit early identification of 'vulnerable' children so that earlier diagnosis and treatment, or provision, will be possible. The kinds of disability about which this sort of information is needed are not only the grosser forms, but also the more numerous 'minimal' handicaps which, if undetected, at best prevent children from realising their full potential, and at worst cause grave psychological damage due to the covert nature of the difficulties.

The long-term aims of the Study are:

- (a) To explore the constancy and change in the pattern of children's development longitudinally, and to investigate the associated educational, environmental and physical factors.
- (b) To follow the progress—over a longer period—of those children who at birth might be considered 'at risk' in order to evaluate possible latent effects; and also to examine any postnatal factors, environmental, educational or medical, which may minimise a handicap.
- (c) To identify and follow the progress of children who at 7 years of age are already handicapped or showing signs of difficulty; those who

because of adverse social or other circumstances might be considered 'at risk' of becoming educationally backward or socially deviant; and those who display exceptional talent or aptitude.

- (d) To evaluate the efficacy of medical and educational provision for handicapped, deviant and exceptional children.
- (e) To identify groups of children of special interest, including many of those enumerated under (c) and (d) above, so that intensive studies may be mounted by expert teams. This would permit much more detailed and comprehensive investigations of the factors involved against a 'backcloth' of the necessarily cruder data gathered in the follow-up of the whole cohort.

These aims demand an inter-disciplinary research team and an integrated approach. The Co-Directors are an educational psychologist and a paediatrician: the former is also the Director of the National Bureau for Co-operation in Child Care, providing a direct link with the body responsible for the administration of the Study; and the latter, having directed the 1958 Perinatal Survey, establishes a link with the earlier work. An educational psychologist has overall charge of the research and the staff further consists of a Senior Medical Research Officer—for a period of 18 months—a Sociological Research Officer and an Administrative Secretary. In addition, a statistician was seconded part-time to the Study and has been concerned with all aspects of the research.

### 3. THE STRUCTURE OF THE RESEARCH

The research team for the present 3-year project started their work in October, 1964, with the exception of the Senior Medical Research Officer who commenced 3 months later.

The children in the cohort were at this time about  $6\frac{1}{2}$  years old and it was decided to complete as much of the field work as possible by the end of July, 1965, for a number of reasons. First, the majority of the children would be leaving infant schools and classes at this date and it was obviously desirable, where a change of school was involved, to gather educational information from teachers who in many cases had had the opportunity of observing the children's development over a number of years. Secondly, a change of school would involve further administrative work in tracing new schools. Thirdly, the Study had undertaken to present a first report to the Central Advisory Council\* by the spring of 1966, so that time was extremely short.

Tracing the children was the first major exercise and it would not have

\*The Central Advisory Council for Education (England) was asked under the chairmanship of Lady Plowden to 'consider primary education in all its aspects and the transition to secondary education.' Their report is expected by the end of 1966.

been practicable without the generous assistance of every local education authority in the country. In response to a request from the Central Advisory Councils for Education in England and Wales and from the Scottish Education Department, the authorities circularised schools, scrutinised their records and returned details of every child known to them born in the 'Survey week'. However, a sizeable minority of children were still untraced and a great deal of time and effort has been spent in reducing the size of this residual group in order to obtain a maximum possible return.

Even more administrative work was involved in the task of identifying the perinatal records of the 15,300 children whose names were returned so that the data gathered in the Perinatal Survey could be 'linked' with current data. The invaluable help of the General Register Office must be acknowledged here.

The Study was mounted in collaboration with the Association of Chief Education Officers (in England and Wales), the Association of Directors of Education (in Scotland), and the Society of Medical Officers of Health. With their support and advice, active co-operation was obtained from every local authority in gathering data on the children. The Chief Education Officers and Principal School Medical Officers kindly undertook to arrange for the completion and return of the questionnaires and tests provided; and for the prior distribution of letters to schools and parents.

The material consisted of an 'Educational Assessment' booklet and five tests (for schools); a 'Parental Questionnaire' to be completed usually by a health visitor, in an interview with the mother; and a 'Medical Questionnaire' for completion by a school medical officer on examination of the child. Further details about this material and the processing of the data is contained in Section III: 'Methodology of Data Collection'. Copies of the three questionnaires are in Appendix 2.

The educational material was distributed to local authorities in March 1965, shortly after the children's 7th birthday and the Parental and Medical Questionnaires were sent in the following month.

## **B. The Present Report**

This report, then, is of an interim nature, being produced about half way through the span of the 3-year project. Further, it is confined to a consideration of the results for children in England because of the terms of reference of the Central Advisory Council.

Most of the first 18 months was, of course, devoted to tracing the children and then identifying their perinatal records; deciding what kinds of information would be gathered and from whom; formulating

hypotheses to be tested; designing the various questionnaires and selecting the most appropriate tests to be used; distributing material to all the local authorities; checking it for accuracy and completeness as it was returned; and transferring the data on to punched cards and then on to magnetic tape for computer analysis. More detailed accounts of some of these aspects of the project are given elsewhere in this report.

In order to produce a report for the Central Advisory Council to consider, it was necessary to impose a 'deadline' after which no material could be included for analysis. Thus, material received after the middle of August, 1965, has not been utilised, but will subsequently be added to the earlier material which forms the basis of the present report; all the data, including the information on children in Wales and Scotland, will then be further analysed for the final report of the 3-year project.

The present report, therefore, is based upon a sub-sample of the cohort of children. There is evidence of some bias in this sample of 'early returns' and this is fully discussed in Section II B: 'Description of the Sample'. However, such bias as there is has been taken into account, where appropriate, in any interpretations made or conclusions drawn.

The terms of reference of the Central Advisory Council and the great speed with which the present report had to be prepared have both played their part in shaping it. In addition, tentative interpretations of the results have been made where more elaborate or more sensitive statistical treatment is indicated but has not yet been possible.

Information obtained from this Study falls broadly into two categories. First there is a 'descriptive' element. A large amount of data has been gathered on a national sample of 7-year-old children. This information is of considerable interest and value in itself, providing as it does a picture of many facets of the children's education, growth, behaviour, health and environment. The results are presented and discussed in Section V: 'Descriptive Statistics'. Strictly speaking, however, this section is not of a purely 'descriptive' nature since, where appropriate, comparisons are made between the results for boys and for girls, so that hypotheses are being tested about possible sex differences.

The second category of information is contained in Section VI: 'Inter-relationship of the Variables', which deals with a few of the relationships between the many factors likely to affect children's development. Of course, the most interesting relationships are causal ones because these are most likely to have practical implications. If, for example, it can be shown that a particular circumstance, or combination of circumstances, is likely to lead to certain adverse effects, the way may be open for preventive measures. Even where prevention is impossible, a knowledge of causation may permit some amelioration of the effects.

However, to demonstrate an association between factors is not necessarily to show a cause-effect relationship. For example, it is known that there is a relationship between children's height and their measured intelligence. But this does not mean that on the whole taller children are more intelligent than shorter ones *because* of their height. It seems probable that both of these factors are linked to others which form part of a complex web of predisposing conditions favouring both physical growth (in terms of height) and mental growth (in terms of intelligence.)

Great care must therefore be taken in interpreting demonstrable relationships. The factors involved are often complex and subtle and it is extremely unlikely that simple answers will be found to those questions we most want answered.

The analyses carried out and discussed in this report are, then, in the nature of first steps along a difficult but challenging path towards a greater understanding of children's growth and development. Some of the results presented confirm those obtained by other workers in this field; some produce interesting new evidence; some point the way to further investigation; and some results have not been presented at all at this stage because of the danger of over-simplification or because it was considered advisable to await a more comprehensive analysis of all the material. Finally, there are, of course, many aspects of the Study which have not yet been examined for lack of time.

### *References*

BUTLER, N. R. and BONHAM, D. G. *Perinatal Mortality* (E. and S. Livingstone Ltd) (1963).

## **II. Description of the sample**

### **A. The population**

The population selected for the present report consists of all children who were singleton births, living in England at the time of the survey, who were born between 3rd and 9th March, 1958, inclusive. (See Section III for a description of data collection.)

This Study was designed so as to include the surviving children of the Perinatal Mortality Survey (Butler and Bonham, 1963) who were currently living in England. In addition, the population includes immigrants and some children who were born in Britain during 3rd–9th March but who were, for various reasons, not included in the Perinatal Survey.

Where the population of interest is different from the above (e.g. children in local authority schools only), this is indicated in the body of the text.

### **B. The present sample**

The children included in the present sample are those for whom information had been received by the middle of August, 1965.

Since more 'Educational Assessment' booklets had been completed by this date, and since punched cards—containing most of this information—were available at an early stage, some of the analyses were completed using this data before all the information on each child was available for analysis. The total number of children for whom most of the educational data were available was 10,963; of these, 10,833 were known to be in maintained infant, junior with infants, or all-age schools, or in independent schools catering wholly or mainly for children who are not handicapped; and this latter figure is the total involved in 'counter sorter' analyses using these cards. The number of completed Parental and Medical Questionnaires received by the middle of August was 7,985; in general, therefore, where tabulations were produced from these

questionnaires using the 'counter sorter', this latter is the approximate total involved. Where computer analyses were done, the totals for tables will vary according to the number of cases where particular information was unanswered. (See Section III F for details of data processing.)

In addition to the above, 1,896 'late returns' had come in by the beginning of January, 1966. Although it was not possible to include these 'late returns' in the main analyses, the Social Class distribution has been compared with that of the present sample. An overall test of significance indicates a difference in the distributions, although a test for trend of the proportions of 'late returns' in each Social Class category (Registrar General's classification) from Class I to Class V was not significant (see Table 1). Thus, although there does appear to be a difference between the two groups occurring in Social Classes II and V, there is no evidence that it involves a shift towards one end of the (nominal) scale.

In most analyses, however, comparisons have been made within occupational group classifications, thus allowing for any bias arising in this way.

The 1961 census figures on occupational classification are also presented in Table 1. It should be noted that the present survey is of 7-year-old children, whereas the census figures relate to a sample of households.

**Table 1.** Occupational Group distributions

Registrar General (1960) Social Class Classification	PRESENT SAMPLE		LATE RETURNS		1961 CENSUS
	N	Per cent	N	Per cent	Per cent
I	443	5.7	96	5.1	3.8
II	1131	14.6	338	17.8	17.0
III	4387	56.8	1025	54.1	51.3
IV	1322	17.1	292	15.4	20.3
V	440	5.7	145	7.6	7.6
TOTAL	7723	100*	1896	100*	100*

Test present sample against late returns:

Chi-squared (Trend) = 0.02; not significant

Chi-squared (Departure from linear trend) = 25.5 (3 d.f.);  $p < 0.001$

Total chi-squared = 25.5 (4 d.f.);  $p < 0.001$

\*Throughout the report percentages in tables are quoted to one decimal place and the total percentage is always given as 100.

A further comparison has been made using sex, reading and adjustment scores, comparing the children for whom there are educational

data but no parental and medical information, with those for whom this latter information is also available. Significantly worse adjustment and reading scores were found among those children with the missing parental and medical information but no significant difference was found in the proportion of the two sexes (see Table 2).

**Table 2. (a)**

Southgate Reading Test Scores	Without Parental and Medical Information		With Parental and Medical Information	
	N	Per cent	N	Per cent
0-3	29	0.8	40	0.6
4-6	96	2.6	115	1.7
7-9	193	5.3	269	4.0
10-12	219	6.0	227	3.4
13-15	235	6.4	389	5.9
16-18	253	6.9	437	6.6
19-21	304	8.3	570	8.6
22-24	363	9.9	755	11.4
25-27	614	16.8	1047	15.8
28-30	1348	36.9	2785	42.0
TOTAL	3654	100	6634	100

Chi-squared (Trend) = 50.2;  $p < 0.001$

**Table 2. (b)**

Bristol Social- Adjustment Guide Total Scores	Without Parental and Medical Information		With Parental and Medical Information	
	N	Per cent	N	Per cent
0-9	1975	59.0	4305	66.6
10-19	828	24.7	1395	21.6
20-29	402	12.0	591	9.1
30-39	116	3.5	152	2.3
40-49	24	0.7	19	0.3
50+	5	0.1	5	0.1
TOTAL	3350	100	6467	100

Chi-squared (Trend) = 65.2;  $p < 0.001$

**Table 2. (c)**

Sex	Without Parental and Medical Information		With Parental and Medical Information	
	N	Per cent	N	Per cent
Boys	1966	52.2	3462	50.3
Girls	1801	47.8	3416	49.7
TOTAL	3767	100	6878	100

Chi-squared = 3.4 (1 d.f.);  $p > 0.05$  not significant

### C. Inferences made from the sample

Inferences from the present sample are strictly applicable only to the (1 week) population as defined above. However, it may reasonably be assumed that this population is a representative, although strictly speaking non-random, sample from a larger population consisting of children aged between 7 and  $7\frac{1}{2}$  years (their ages when the data were obtained) who were born during an (unspecified) period of time which includes 3rd to 9th March, 1958. Thus, interest centres on inferences made about all children aged between 7 and  $7\frac{1}{2}$ .

Therefore, the assumptions have been made that secular trends have not taken place—or were negligible—during such a period and that the period is long compared to the 1 week of the sample; and for the purpose of testing hypotheses the sample has been treated as if it were a random sample from a population, which for practical purposes can be considered infinite. Where it is felt that these assumptions are inadmissible, especially with regard to estimation of population means, this is indicated in the main text.

It must also be emphasised that the basic sampling unit is the child. It is not possible, therefore, to use the data directly to estimate population parameters of distributions where the basic units are not individual children but—for example—households or schools. Thus, an estimate of the mean size of infant schools, calculated in the usual way from the sample, would yield an estimate too large since the larger schools contribute more children to the sample.

All estimates which are given are therefore applicable only to the population of school children.

### D. Sources of bias in the present sample due to non-response

In the present sample this matter has been investigated quantitatively in the comparison of 'early' with 'late' returns for Occupational Group,

Reading and Social-Adjustment. Some of the possible sources of bias might with advantage be outlined.

Four categories of children who will not be included can be distinguished. First, there were those whose parents decided not to participate. This category is small—a little more than 1 per cent at present. Secondly, there were the children whose home circumstances made it impossible for a parental interview or medical examination to be made; or whose parents simply failed to keep appointments. This group will contain a disproportionate number of children from large families, socially underprivileged homes; or parents who for any reason have little time to devote to their children. Thirdly, there were the children in the cohort who have not as yet been traced or, having been traced, moved to another area and have not yet been re-traced. It is likely that in the majority of these cases incorrectly recorded dates of birth or other clerical error is responsible. However, this category will contain a disproportionate number of children whose families move home frequently. The fourth category includes children who have emigrated since the 1958 Perinatal Study. This will be relevant only to associations with retrospective data, including the perinatal material.

### *References*

BUTLER N. R. and BONHAM, D. G. *Perinatal Mortality*. (E. and S. Livingstone, Ltd) (1963).

### III. Methodology of data collection

#### A. Design of the structured questionnaires

It was decided to gather the information from three main sources: from schools, by means of a questionnaire (the 'Educational Assessment' booklet), specific tests and other assessments; from mothers, who would be interviewed by an officer of the local authority, usually a health visitor, using a structured questionnaire (the 'Parental Questionnaire'); and from School Health Services, who would undertake a medical examination, some special tests and complete a questionnaire (the 'Medical Questionnaire').

In considering the data to be collected, the following factors were particularly important:

1. The relative priorities to be given to contemporary and to retrospective data, having in mind that no information was gathered on the children during a seven-year period.
2. The extent to which comparable information could be obtained from many different field workers; and also the difficulty of interpreting data of a subjective nature.
3. The need to limit the burden of work and time for local authorities, schools and parents.
4. The time available for reviewing what others had done in the field, for drafting and 'piloting' the questionnaires.
5. The amount of time which would be available later for processing and analysing the material.

It became apparent at an early stage that the material would have to be designed so that the data could be transferred to punched cards. Furthermore, it was decided to structure the questionnaires so that the answers were, wherever possible, in pre-coded form, i.e. the field workers in response to the questions were asked to ring a code, rather than write in an answer. This reduced the need for coding the material when it was

returned. Such a structure, of course, imposed limitations upon the kinds of questions that could be included and determined to some extent the way in which they were asked.

It was further decided that the questionnaires should require no transcription sheets, so that the data could be punched direct on to cards from the forms themselves. Before the general lay-out was finalised, advice was sought both from the printers and from the commercial bureau who were to do the card punching. Amongst other factors which had to be decided were the size of print and paper, the spacing of the questions, and hence the overall size of the documents. Important considerations here were general 'readability' and attractiveness of lay-out and, not least, the cost involved in terms of the weight and quality of paper.

By and large the individual experience, skills and qualifications of the members of the research team determined who did the actual drafting of particular items or questionnaires. However, since the approach throughout was inter-disciplinary, regular and detailed discussions on all the questionnaires took place, involving the Co-Directors and the whole research team.

Advice and comment was sought from all members of the Steering Committee and some members of the Consultative Committee, as well as from countless other individuals—doctors, teachers, health visitors, school welfare officers, research workers—all experts or practitioners in their respective fields. It was possible to do some piloting on all the questionnaires, but pressure of time meant that we were unable to do as much of this as would have been desirable. For the most part the material took shape and was finalised as a result of exhaustive discussion and consultation.

It was thought essential to ensure that anyone who was to use the material should know something about the Study. Each of the questionnaires, therefore, contained a brief summary of the background to the Study and its present aims.

## **B. The educational assessment**

A questionnaire was needed which would establish certain basic facts about the children's school environment, such as the type and size of school and size of class. It was thought desirable, too, to obtain some information about less tangible aspects of the environment, such as the contact between the school and the home, the 'social class' of the parents whose children attended the school and the basis on which children were allocated to classes. Finally, a fairly comprehensive picture was needed of the individual child: his abilities, his adjustment and behaviour and the interest and support given by his parents.

Finally, six different forms of assessment were decided upon:

1. *The 'Educational Assessment' booklet* (see Appendix 2) which established facts about the school and its organisation, the relationship between the school and parents, and which required assessments by the teacher of the child's ability and certain aspects of his behaviour.
2. *The Bristol Social-Adjustment Guide* (Stott, 1963) to obtain a picture of the child's behaviour in the school setting. The Guide is a four-page booklet containing some 250 descriptions of behaviour. The teacher is asked to underline the descriptions which best fit the child. Items of behaviour which are, in varying degrees, deviant or which may be symptomatic of emotional disturbances or social maladjustment are later identified by means of a system of coding and transferred to a separate form. It is thus possible, by summing the number of coded items, to obtain a quantitative assessment of the child's adjustment in school: the higher the score, the more indications there are of deviant behaviour. In addition, it is possible, by summing groups of coded items, to obtain a quantitative indication of the way in which any maladjustment is manifesting itself. Stott has suggested that certain 'syndromes' of behaviour disturbance are meaningful, and separate scores can be obtained for each (e.g. unforthcomingness, withdrawal, anxiety for acceptance by adults, hostility towards adults, 'inconsequential' behaviour).
3. *The Southgate Reading Test* (Southgate, 1962) for an objective assessment of the child's reading ability. This is essentially a test of word recognition. The child is asked to select from a number of words, the one which corresponds to a picture in the test booklet; in other items the teacher reads out a word and, again, the child is asked to identify the word from a number of words which he has before him. There are thirty items in all in this test.

A graded word reading test was considered, but it was felt that the Southgate Test was less likely to be known or used already by teachers in infant schools; that it would save time where there was more than one child in a school; and that it would, possibly, be less formal and therefore less stressful for 7-year-olds. While this test was unable to extend the above average reader at this age, it did differentiate very clearly the backward readers. For the aims of the Study, this advantage outweighed the disadvantage of a rather low 'ceiling'.

4. *The 'Copying Designs' Test* to obtain some assessment of the child's perceptuo-motor ability. Although this test has been scored, it has not been possible as yet to use it for any analyses.

5. *The 'Drawing a Man' Test* as an indication of the child's general mental and perceptual ability as well as other maturational aspects. Although there has not been time or money available at this stage to mark and process this test, it is very cheap as well as quick and easy for teachers to administer; moreover, it was felt that it would provide them with a useful 'sandwich' between the formal tests. It is hoped eventually to use a more sophisticated marking procedure than that suggested by Goodenough (1926). When analysis does become possible, it is intended to correlate the results with other factors.
6. *The Problem Arithmetic Test* (see Appendix 2: the 'Educational Assessment' booklet) to assess the child's ability in this field. The individual items were chosen in the main from a large number previously used by the National Foundation for Educational Research, so that information was available on their facility values and it was possible to select those items which on a 7-year-old population would produce a normal distribution of scores. We are indebted to the N.F.E.R. for their help on this.

Piloting of the educational assessment indicated that completion for one child would take from 1 to  $1\frac{1}{2}$  hours. For more than one child an additional  $\frac{1}{2}$  to  $\frac{3}{4}$  of an hour per child would be needed. However, most teachers would have only one child in their class who was taking part in the Study.

### C. The parental questionnaire (see Appendix 2)

A questionnaire had to be designed which would be suitable for completion by an officer of the local authority, usually a health visitor, by means of an interview, where possible, with the child's mother or permanent mother substitute. Specially trained interviewers would obviously have been preferable but this was too costly even to consider.

It was soon realised that the problems of achieving a satisfactory compromise in terms of items which would be included was going to be most acute in this particular document. The chief difficulty lay in reconciling the need to obtain information about the child's present environment and development with the desirability of obtaining retrospective data over a seven-year period without over-burdening the informant and interviewer in terms of the time needed to complete the questionnaire.

It thus became essential to establish some priorities in respect of items to be included. It was felt that basic contemporary data should have first priority since in general these would normally be more reliable (i.e. less subject to distortion or simple inadequacy of memory) than retrospective details. However, some kinds of contemporary data, such as the parents'

religion, could equally well be ascertained in future studies of the children and was therefore given lower priority.

With regard to retrospective information, a balance had to be achieved between the assumed importance of particular aspects in relation to the child's development and the extent to which any reliability could be attached to the mother's present report. Information about developmental milestones or pre-school difficulties are good illustrations of this difficulty. On the one hand, it was felt that such information would be valuable, whilst on the other hand it seemed likely that mothers' memory of these events might not only be faulty—particularly if she had a large family—but, more important, might actively be influenced or distorted by the child's subsequent development.

Information about the emotional and intellectual climate in the home, the parents' aspirations for the child and their general attitudes towards bringing up children would have been most valuable. Reluctantly, it was decided however, either to omit or cover only sketchily these particular areas because of the limitations of time, the varying circumstances under which the interviews would take place and the varying experience of the interviewers.

The Parental Questionnaire was considered to be the most suitable means of obtaining a full medical history from the mother. Not only would this save the doctor's time during the medical examination, but in many cases the health visitor might be acquainted with the health of the child, both in its pre-school and school days. It was advised, and proved possible in the great majority of cases, that the completed Parental Questionnaire be made available to the doctor in time for his examination of the child. For those instances in which this was not possible, part of the medical history, the systemically classified section, was reproduced in the Medical Questionnaire for completion, or amendment at the time of the examination if this was thought necessary.

Piloting of the questionnaires indicated that they would take an hour to an hour and a quarter to complete for an 'average' child.

#### **D. The medical questionnaire** (see Appendix 2)

A comprehensive medical examination of each child was considered to be an essential part of the follow-up of this cohort.

Since the examinations were to involve large numbers of full-time and part-time medical officers of the local authorities, it was important to ensure as far as possible a uniform pattern of examination as well as a standardised method of recording the findings. To give full clinical freedom in taking the medical history or in conducting the examination would create an impossible task in the classification and analysis of the

data; at the other extreme, over-simplification leads not only to loss of information, but also to a sense of frustration in professional field workers whose skills are not fully utilised.

It is hoped that the method by which medical data were gathered for this Study avoided these two extremes by careful questionnaire design. The spectrum of information was wide, whilst individual bands within that spectrum were sharply defined.

The pre-coded form of question was adopted, and the sections of the questionnaire were designed in such a way that they matched the corresponding sections of the medical history in the Parental Questionnaire. To overcome the limitations imposed by this form of question the opportunity for written amplification of answers was provided with each question.

In the case of tests of function and the examination of the special senses, the conditions for the examination were set out in detail in order to ensure that the results would be as comparable as possible.

The Questionnaire included measurements of height, weight and head circumference; tests and assessment of vision, speech and hearing, including an audiogram; a urine test; tests of motor co-ordination and laterality; as well as a full clinical examination.

Piloting indicated that with the help of a school nurse the whole examination, without the audiogram, would take 30-45 minutes.

### **E. The completion and return of the material**

The material was sent in bulk to each local authority, which then made arrangements for its distribution, completion and return. In most cases, too, the authorities were able to give further help by checking the material for completeness before returning it.

### **F. Data processing**

The returned questionnaires and test forms were double checked by hand for completeness, coding errors, certain logical inconsistencies and accuracy of scoring. Where errors had occurred it was sometimes possible to rectify them by reference to other parts of the questionnaires.

The data for each child were punched on to seven 80-column cards, the last of which also contained information from the 1958 Perinatal Mortality Survey for those children whose records had been linked. These latter data were reproduced from the 1958 Survey punched cards.

The punching and verifying of the cards was carried out by a commercial bureau because of the size of this operation.

The first card containing most of the educational data for each child

was punched by the end of August, 1965, and used for 'counter sorter' analysis.

When all seven cards for each child were available in January, 1966, they were loaded on to magnetic tapes using the IBM/1401 computer at Imperial College, London, and the data were edited on the IBM/7090 computer at Imperial College for incorrectly coded and mis-punched information.

The edited magnetic tapes were then used for computer analysis on the 7090. This work was carried out using an adaptation of a programme lent to the Study by the Government Social Survey (Central Office of Information).

Due to technical difficulties which could not be resolved in the time available, data for some 300 children could not be loaded from the cards on to the magnetic tapes. Thus, where comparable analyses were carried out on the computer and also on the 'counter sorter', the totals differ somewhat.

For the latter analyses, the cards (1 to 7) were divided into seven separate packs, and straight counts and two-way tabulations produced from each pack.

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## IV. Statistical analysis

Due largely to the shortage of time, the statistical analysis has been restricted to providing estimates for means and testing hypotheses of a straightforward nature, using the methods of analysis detailed below.

Since most of the hypotheses were concerned with associations in contingency tables, the basic method of analysis has been to apply an overall test of association. Although in some cases more detailed hypotheses have been formulated, it has not always been possible to use a more powerful procedure than the overall chi-square test.

In other cases, however, particularly where sex differences are concerned and a natural ordering exists in the levels of the other classification, a test for a linear trend of the proportion in the resulting  $2 \times K$  table has been carried out, with integers 1 to  $K$  used as scores. This also furnishes a valid test of no difference between the mean scores of the two levels of the dichotomous classification (Armitage, 1955). This test is referred to as the Trend Test.

It is also possible to obtain a test for departure from a linear trend. If no such departure exists, it may be inferred that any trend persists throughout the whole table and that the mean proportions in any two levels of the  $K$ -level classification are different.

In relation to sex differences, one may reasonably assume in most cases that the sexes are randomised over other factors and that any contrast between the sexes is orthogonal with respect to the other factors.

One limitation of the present analyses is the absence of powerful tests for partial association in multi-dimensional tables, except in the special case of a  $2 \times 2 \times K$  table (Birch, 1964) where the hypothesis concerns the partial association of two factors at fixed levels of a further factor, and where the assumption of no second order interaction has been made; that is to say, the degree of association is the same in each constituent  $2 \times 2$  table. Tests for second order interaction have been made (Plackett, 1962) and in no case has a significant interaction been found.

In any set of analyses on one sample, the statistical tests of hypotheses will not generally be independent. This fact must be taken into account in the interpretation of any results.

Furthermore, in a large group of independent tests, some are to be expected to show significance at the nominal level, even if the null hypotheses are true—purely by chance—and this has led to regarding the 1 per cent rather than the 5 per cent level as the more appropriate one at which to begin rejecting null hypotheses, although significance values are shown at the 5 per cent as well as the 1 per cent and 0.1 per cent levels. Thus, the tendency has been towards a conservative interpretation of the results, which is also desirable in an interim report of this nature.

The hypotheses to be tested had all been formulated in advance. This was done on the basis of past evidence with a view to confirming the results of previous research studies and experience and to answer certain basic but relatively straightforward questions.

### *References*

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## V. Descriptive statistics

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Date 17.3.69

Acc. No. 2043



### A. Educational factors

#### I. INTRODUCTION

The data included and discussed in this section were gathered from schools. The topics dealt with centre on children's abilities and the question of backwardness and difficulties in school; the results for boys and girls are compared.

It will be seen that the total number of children for whom results are given differs in various sub-sections. The reasons for this are outlined in Section II B: 'Description of the Sample'.

However, they might with advantage be re-stated in so far as they relate to the educational data presented here. Most of these data were recorded on one 80-column punched card. This card was available at an earlier date than the other six cards and it was therefore possible by sorting the cards (using a 'counter sorter') to obtain information and produce simple tables. The number of children in English schools for whom this card was available was 10,963.

A breakdown of this number by the type of school attended is given in Table 3. It will be seen that 10,833 of the children were known to be in 'ordinary' maintained and independent schools, i.e., infant, junior with infants, and all-age schools and independent schools catering wholly or mainly for children who are not handicapped; 48 children were in special schools for handicapped pupils; and there were 73 children in schools which apparently did not fall into any of the categories listed. At a later stage, a re-scrutiny of the individual Educational Assessment booklets may make it possible to classify these schools.

In this sub-section, results are presented largely for children in 'ordinary' schools; thus, if the results were obtained by means of sorting punched cards, the total number of children involved is 10,833.

At a later stage in the data processing, the information was transferred

to magnetic tape for computer analysis. There were one or two minor difficulties at that stage which could not be resolved in the time available, so the data for some 300 children had to be excluded. Where the results are presented from computer analysis, therefore, the total number of children involved in 'ordinary' schools is 10,596.

There is one further total which appears frequently in tables in this section, where there is a comparison between the sexes. When the comparisons are one facet of more detailed computer analyses involving the Occupational Groups of the fathers, the figures for boys and for girls have

**Table 3.** Type of school attended

	No. of children
<i>Maintained schools</i>	
Infant School	5981
Junior with Infants School (or Primary with Infants)	4529
All-age	34
Day Special School	32
Residential Special School	6
Other	40
No data	9
<i>Independent Schools</i>	
Independent School (to include grant-aided schools) catering wholly or mainly for children who are not handicapped	289
Special School for handicapped children	10
Other	33
<b>TOTAL</b>	<b>10963</b>

been abstracted from larger tables. Where the Occupational Group of the father was not known at the time, it was not possible to separate the boys from the girls in these larger tables (not presented in this report). Thus, it has only been possible to compare the sexes, if the figures were abstracted from larger tables, when the Occupational Group was known. For these tables, then, the results are presented for a sub-sample of 6,878 children in 'ordinary' schools. There is evidence that this sub-sample is biased in certain respects: better reading ability; better social-adjustment in school. However, there is no reason to believe that this bias will affect the validity of the comparison between the boys and the girls in that group.

## 2. READING ABILITY

(a) *Southgate Group Reading Test results*

This test is one which is primarily an assessment of word recognition. The results have been abstracted from a more detailed table, not presented in this report, and are for children in 'ordinary' maintained and independent schools. They are given in Table 4 and in graph form in Figure 1.

The superiority of the girls when compared with the boys is very clear. The difference in the distribution of the scores between the sexes is highly

**Table 4.** Southgate Reading Test scores

N = 6878

Reading scores	Boys		Girls	
	N	Per cent	N	Per cent
0-3	26	0.8	14	0.4
4-6	68	2.0	47	1.4
7-9	170	4.9	99	2.9
10-12	205	6.0	122	3.6
13-15	250	7.3	139	4.1
16-18	256	7.4	181	5.3
19-21	317	9.2	253	7.4
22-24	380	11.1	375	11.0
25-27	564	16.4	583	17.2
28-30	1202	35.0	1583	46.6
Total tested	3438	100	3396	100
No data	24		20	
GRAND TOTAL	3462		3416	

Chi-squared (Trend) = 137.4;  $p < 0.001$ Chi-squared (Departure) = 13.8 (8 d.f.);  $p > 0.05$  not significant

significant statistically. It will be seen that of the boys tested in this sub-sample, only 1,202 (35 per cent) achieved a score of 28 or more, whereas 1,583 (approximately 47 per cent) of the girls did so. Further, the results of the statistical analysis confirm what inspection of the table suggests, namely, that there is a difference between the sexes at every level of reading ability, as assessed by this test.

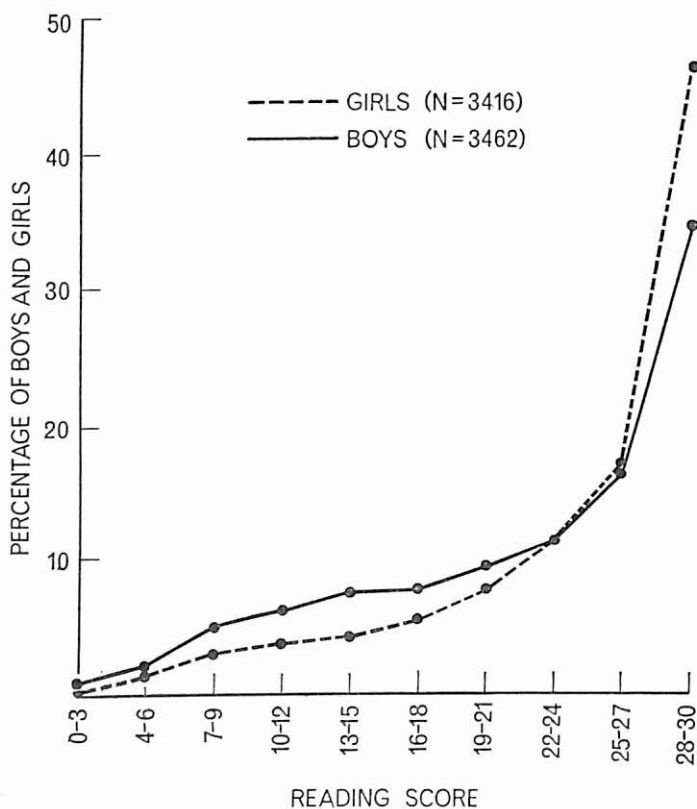
The overall superiority of the girls was not unexpected and confirmed the hypothesis which was postulated in advance.

Table A1 of Appendix 1 gives a more representative picture when the the results for boys and girls are combined and is based upon a larger sample of 10,596 children. One point is worthy of note in relation to the

distribution of scores. The test clearly did not contain sufficient difficult items to 'extend' the more able readers. Thus, 47 per cent of the girls and about 35 per cent of the boys achieved a score of 28 or more out of a possible 30. This was expected and, as is explained elsewhere, this test was chosen partly because it was known that it would give good discrimination among the poorer readers.

**Figure 1.** Southgate Group Reading Test scores by sex.

Children in 'ordinary' maintained and independent schools  
N = 6878



*(b) Stages reached in basic reading schemes*

In addition to the Southgate Test, information was obtained about the 'primer' or reading book in the basic reading scheme which the children were currently using.

This item of information was gathered to supplement the results of the reading test and a rating of the children's reading ability by their teachers. Secondly, it was considered that the results obtained would be

of particular interest to teachers, since the assessment of a child's reading ability in terms of the primer he is reading is a familiar frame of reference. Thirdly, the results would have possible implications for reading provision not only in infant, but also in junior classes. Fourthly, it was felt that a comparison of the present findings with those of Morris (1959) in Kent schools would be valuable.

It is recognised that there will be some variability in the level of difficulty of books in the most widely used reading schemes. Nevertheless, Morris found – on questioning experienced teachers – that, despite this variability, meaningful distinctions could be made between children who had reached different stages. Thus, 'it was customary for infant teachers to consider a first primer as dividing the poor and non-readers from the rest at the age of 7'. Children who by this age were reading Book 2 or Book 3 were at the stage where their reading was mainly mechanical; such children still needed a great deal of skilled help and encouragement for optimal progress. Pupils who had reached Book 4 or beyond were considered to have true reading ability; given continued encouragement and appropriate reading material they were on the whole capable of sustaining progress without the need for specific help from the teacher.

(i) *Comparison between the sexes.* The results obtained for children in 'ordinary' maintained and independent schools are given in Tables 5 and 6. The figures in the first of these two tables were abstracted from a more detailed table, not presented in this report, in order to compare the sexes.

**Table 5.** Stages reached in basic reading schemes.

N = 6878

Stages reached	Boys		Girls	
	N	Per cent	N	Per cent
Children on Book 4 or beyond	1604	46.8	2126	63.0
Children on Book 2 or 3	1439	42.0	1052	31.2
Children on Book 1 or below	382	11.2	198	5.9
Total assessed	3425	100	3376	100
Don't know	16		19	
No data	21		21	
GRAND TOTAL	3462		3416	

Chi-squared (Trend) = 186.3;  $p < 0.001$

Chi-squared (Departure) = 4.95 (1 d.f.);  $0.05 > p > 0.01$  not significant

The superior reading ability of the girls on this criterion is again very clear and highly significant statistically. This adds to the findings discussed in the previous sub-section in that the ability to read Book 4 or beyond will require not only word recognition but will in the main be accompanied by good comprehension of what is read.

The statistical evidence also indicates that there is no departure from this overall tendency. Thus, the difference between the sexes is consistent at all levels of reading ability, as assessed by this 'primer criterion'.

(ii) *The present findings.* The figures for the sexes are not totalled in Table 5 to give overall results because of possible bias. However, figures based on a larger sample of 10,596 children are given in Table 6 and there is no

**Table 6.** Stages reached in basic reading schemes

Stage reached	Present Sample		Kent Sample (Morris)	
	N	Per cent	N	Per cent
Children on Book 4 or beyond	5159	52.8	1644	54.4
Children on Book 2 or Book 3	3899	37.3	797	26.4
Children on Book 1 or below	1028	9.8	581	19.2
Total assessed	10446	100	3022	100
Don't know	55			
No data	95			
GRAND TOTAL	10596		3022	

Chi-squared (Trend) = 29.8;  $p < 0.001$

Chi-squared (Departure) = 224.7 (1 d.f.);  $p < 0.001$

expectation of bias here. They are presented together with results achieved by Morris in her Kent sample.

The present findings, in so far as they represent the national situation in 1965, indicate that some 10 per cent of 7-year-olds in the final term of their infant schooling had still barely made a start with reading. A further 37 per cent had progressed beyond this stage but continued to need specific help.

It has been acknowledged that this criterion of reading ability is relatively crude. Furthermore, the interim nature of the present report dictates a need for care in using precise figures. However, it is clear that a substantial proportion of children transferring to junior schools or classes has not reached a stage in reading where they can make optimal progress without continued teaching of the basic reading skills. Given the present age of transfer, it follows that teachers in charge of first year junior classes

should have a thorough knowledge of methods of teaching reading. Clearly this has practical implications for teacher training as well as for the staffing of junior schools and departments.

(iii) *Comparison with Morris's results.* It will be seen in Table 6 that there is virtually no difference in the proportion of children in the two samples who were on Book 4 or beyond. There may have been differences between the children of above average reading ability but since this criterion gives no differentiation among this group, no conclusions can be drawn. The most striking difference between the samples is that whereas about 19 per cent of the Kent pupils had not progressed beyond a first primer, only 10 per cent of the children in the present sample were in this category.

Interpretation of the difference between the present 1965 findings and those of Morris, obtained in 1954, in terms of a national trend, is not straightforward although the difference between the samples is, statistically, highly significant.

A number of factors must be considered. First, the average age of the Kent children when the assessment was made—at the beginning of their junior school course—would have been approximately  $7\frac{1}{2}$  years, slightly higher than that of the present sample. Secondly, it is very likely that the reading standard of these Kent children was above the national average, not only because of the generally higher socio-economic level in Kent but also because Morris found on testing a sample of 10–11 year olds in that county 'that the reading attainment of Kent children at the end of their primary school course was above average for the country as a whole'.

Against this, the present sample included a proportion (less than 3 per cent) of children in independent schools, whose reading standard as a group is likely to have been higher than for the rest of the sample, whereas the Kent pupils were all in maintained schools.

Thirdly, a small proportion of the present sample would no doubt have been using the 'initial teaching alphabet' (Downing, 1964) in learning to read, whilst none of Morris's sample would have done so. It is possible that this medium might alter the level of difficulty of primers and so change the nature of the criterion. Lastly, there were differences in the sampling technique used in the two studies.

These complicating factors impose a need for caution in interpretation. Further, if the difference between the two samples does reflect a national trend, it provides no evidence for an increase in the proportion of good readers. This is not to say that such a change has not taken place; unfortunately, this 'primer criterion' does not discriminate amongst the children of average reading ability and above, i.e. those who are reading

Book 4 or beyond. Nevertheless, the difference between the proportion of children in the two samples who had not progressed beyond Book 1 is very marked. The tentative conclusion seems warranted that in the country as a whole the number of poor and non-readers transferring to junior schools and classes has dropped in the interval from 1954 to 1965.

(c) *Teachers' ratings of reading ability*

A third assessment of the children's reading ability was obtained in the form of a rating by the teacher on a five-point scale.

In an attempt to increase the comparability of ratings made by several thousand different teachers, three steps were taken. A distribution of ratings was suggested which the teachers were told might be expected in a representative cross-section of children of this age; the teachers were asked to rate the child 'in relation to all children of his age (i.e., not just his present class or, even, school)'; verbal descriptions were given for each of the five possible ratings.

These verbal descriptions are detailed in Table 7, together with the results for boys and girls. Once again the figures are abstracted from a more detailed table, not presented in this report, but the combined

**Table 7.** Teachers' ratings of reading ability

N=6878

Descriptions of Ratings	Boys		Girls	
	N	Per cent	N	Per cent
Avid reader. Reads fluently and widely in relation to his age	176	5.1	296	8.7
Above average ability. Comprehends well what he reads	716	20.8	1016	29.8
Average reader	1493	43.3	1512	44.3
Poor reader. Limited comprehension	958	27.8	540	15.8
Non-reader, or recognises very few words	105	3.1	48	1.4
Total tested	3448	100	3412	100
No data	14		4	
GRAND TOTAL	3462		3416	

Chi-squared (Trend) = 206.3;  $p < 0.01$

Chi-squared (Departure) = 14.0 (3 d.f.);  $0.01 > p > 0.001$

results for the sexes on a sample of 10,833 children in 'ordinary' maintained and independent schools are given in Appendix 1, Table A3.

Once again, the superior reading ability of the girls in this sample can be clearly seen and is statistically highly significant. There were more girls (approximately 39 per cent) than boys (about 26 per cent) rated as of above average ability; also, there were fewer girls (approximately 17 per cent) than boys (approximately 31 per cent) below average.

The difference between the sexes is so marked, and confirmed by the results of the other two assessments of reading ability, that the firm conclusion is warranted that at this age girls are superior to boys in all aspects of reading ability.

### 3. ABILITY IN NUMBER WORK

#### (a) *Problem arithmetic test results*

There was some difficulty in deciding upon an appropriate objective assessment of the children's ability in number work. A test of mechanical arithmetic could have been devised or selected; but this, it was thought, would hardly do justice to the wider range of activities to be found in many infant classes. On the other hand, a test of mathematical concepts might have been time-consuming or difficult to administer. It was finally decided to devise a short test of problem arithmetic, thus avoiding some of the restrictions of purely mechanical calculation, and assessing to some extent the ability to apply arithmetical knowledge to problems appropriate to this age group.

The test was devised especially for use in this Study. There were ten problems in all and they were presented in the estimated order of difficulty. Six of the problems had been used before by the National Foundation for Educational Research on a large sample of 7-year-old children. Information was therefore available on the probable level of difficulty for these questions.

The original intention had been to make this an oral test to avoid penalising those children who could not read fluently. However, in doing this it was possible that some children would be put at a disadvantage because of difficulty in remembering questions accurately whilst calculating the answers. Thus, it was decided to present the problems in printed form but also to ask teachers to read the questions one at a time to the children, repeating where necessary, and allowing as much time as was needed for answering. If a child because of some disability was unable to write his answers, the teachers were asked to record them for him.

The results for a sub-sample of boys and girls in 'ordinary' schools are given in Table 8. They were abstracted from a larger table not presented

in this report. The combined results for the sexes taken from this same table on a sample of 10,596 children are given in Appendix 1, Table A2.

There was a highly significant difference between the distribution of scores for the sexes, strongly indicating that boys are superior to girls in the particular aspect of arithmetic ability assessed by this test. The statistical analysis provided no evidence of any departure from linear trend, indicating that this difference between the sexes persists over the whole range of test scores.

**Table 8.** Problem arithmetic results

N = 6878

Arithmetic scores	Boys		Girls	
	N	Per cent	N	Per cent
0	76	2.2	68	2.0
1	145	4.2	147	4.3
2	290	8.4	325	9.6
3	384	11.2	478	14.1
4	479	14.0	493	14.5
5	502	14.6	476	14.0
6	470	13.7	443	13.1
7	374	10.9	399	11.8
8	332	9.7	268	7.9
9	237	6.9	181	5.3
10	143	4.2	114	3.4
Total tested	3432	100	3392	100
No data	30		24	
GRAND TOTAL	3462		3416	

Chi-squared (Trend) = 16.1;  $p < 0.001$

Chi-squared (Departure) = 16.5 (9 d.f.);  $p > 0.05$  not significant

(b) *Teachers' ratings of number work*

As with reading ability, a subjective rating was obtained from the teachers of the children's ability in number work. The introduction to all the ratings was the same and has been outlined in sub-section 2 (c) of this section.

Once again, verbal descriptions were given for the five points on the rating scale. It will be seen from these descriptions, shown together with the results in Table 8, that stress was laid upon an assessment of the children's insight and grasp of new processes rather than their ability to calculate accurately.

These results were obtained from sorting the punched cards so that the total number of children involved is 10,833 (see Introduction to present section).

**Table 9.** Teachers' ratings of number work

Descriptions of ratings	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Extremely good facility with number and/or other mathematical concepts. Grasps new processes very quickly. Shows insight and understanding	205	3.7	120	2.3	325	3.0
Understanding of number work well developed. Grasps new processes without difficulty	1008	18.2	856	16.2	1864	17.2
Average ability in this sphere	2332	42.1	2385	45.1	4717	43.6
Rather slow to understand new processes. Rather poor facility with numbers, although able to do some things by rote	1780	32.2	1757	33.2	3537	32.7
Little, if any, ability in this sphere. Shows virtually no understanding at all	208	3.8	176	3.3	384	3.6
Total rated	5533	100	5294	100	10827	100
No data	3		3		6	
GRAND TOTAL	5536		5297		10833	

Chi-squared (Trend) = 9.5;  $0.01 > p > 0.001$

Chi-squared (Departure) = 23.3 (3 d.f.);  $p < 0.001$

The statistical test used rejects the hypothesis that there is no difference between boys and girls in their number ability as rated by their teachers. There was a significant overall tendency for the boys to receive higher ratings. However, the highly significant departure from linear trend shows that this tendency was not consistent at all levels of number ability.

Inspection of the table suggests that the reason for this departure from linear trend is that the proportion of boys and girls rated below average is virtually the same, approximately 36 per cent; on the other hand, about 22 per cent of the boys were rated above average, whilst only 18.5 per cent of the girls were placed in this category.

The conclusion seems warranted that within the framework of ratings which lay stress upon insight and understanding in number work, teachers feel that boys of this age show more evidence of above average ability, whereas there is little or no difference between the sexes in the proportions which are below average.

The difference between this finding and the analysis of the Problem Arithmetic testing, which produced no evidence of any differential results above and below average for boys and girls, may be due to the different nature of the two assessments or to different aspects of number ability being assessed. Further research should throw more light on this matter.

However, the results of both assessments indicate that there are more boys than girls of above average arithmetic ability.

#### 4. OTHER ABILITIES

##### (a) *Introduction*

In addition to assessments of number ability and reading, it was important to obtain a more complete and rounded picture of the children's abilities for a number of reasons. Thus, it is hoped at a later date to combine the assessments of other abilities in order to obtain a measure of the children's general level of intellectual functioning. Such a measure will make it possible, for example, to contrast those who are making slower progress in school than would be predicted from a knowledge of their general level of ability with those who are making better progress. Further, it will make possible analyses of the children's attainment when some allowance or correction has been made for those abilities less directly influenced by teaching in school.

An additional reason was that, although there is little published information about children's progress in reading and arithmetic in infant schools, there is even less available about other abilities.

It would have been possible, by adding an intelligence test to the range of objective tests included in the assessment of the children's develop-

ment, to obtain a measure which might have fulfilled some of the functions outlined. However, intelligence tests which could readily have been administered by the teachers tend to have limited reliability at this age; further, it was felt that to add another test would have been an unreasonable imposition upon the teachers' time in the context of an educational assessment which was already to take more than an hour for an individual child.

It was decided, therefore, to obtain ratings by the teachers of each child's 'oral ability', 'awareness of the world around', and 'creativity'. These areas of functioning, it was felt, were very relevant to children's progress in school; they were aspects of development which schools would be attempting to foster; at the same time, they were likely to be influenced by factors outside the school to a greater extent than were reading or arithmetic.

The shortcomings of ratings were fully appreciated; and the attempts made to reduce subjectivity have been briefly outlined already (see subsection 2(c) of the present section). Time has not yet permitted any 'pooling' of the ratings to obtain some more general measure; moreover, particular care will be needed in devising a system of weighting to take account of the different distributions of the three ratings.

In the following three sub-sections, the results for boys and girls are compared. The hypothesis tested in each case was that there would be no difference between the sexes.

#### (b) *Oral ability*

The ability to express thought and meaning orally is of obvious relevance to educational progress. It cannot be equated with verbal ability, which embraces the capacity for understanding and dealing with verbal material of all kinds; nevertheless these two abilities will be highly correlated. Since a rating of verbal ability would be influenced to some extent by a child's performance in reading, it was decided to obtain an assessment of the children's oral ability, as it manifested itself in conversation and in the normal verbal inter-play of the classroom.

There is a highly significant difference between the sexes, the girls receiving more favourable ratings than the boys. However, there was a highly significant departure from linear trend, indicating that the 'gap' between the sexes is not consistent at all levels of oral ability. The results suggest that there is a greater difference between the sexes below average than above. It will be seen that about 24 per cent of the boys were rated above average compared with 28 per cent of the girls; on the other hand, approximately 25 per cent of boys were rated below average, against 17 per cent of the girls.

It is likely that the superiority of the girls in this context is to some extent a reflection of their tendency to be more forthcoming, orally, at this age.

**Table 10.** Teachers' ratings of oral ability

Description of ratings	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
In conversation expresses himself well	572	10.3	665	12.6	1237	11.4
In conversation, or oral lessons, has good vocabulary and variety of phrases in relation to his age	749	13.5	805	15.2	1554	14.4
Average oral ability for his age	2810	50.8	2910	54.9	5720	52.8
Below average oral ability, tends to use simple word groupings	1153	20.9	796	15.0	1949	18.0
Markedly poor oral ability	247	4.5	120	2.3	367	3.4
Total rated	5531	100	5296	100	10827	100
No data	5		1		6	
GRAND TOTAL	5536		5297		10833	

Chi-squared (Trend) = 79.8;  $p < 0.001$

Chi-squared (Departure) = 35.2 (3 d.f.);  $p < 0.001$

(c) *Awareness of the world around*

Some may question the inclusion of this rating in a consideration of abilities, on the grounds that what was being assessed was knowledge rather than ability. It could be argued that the acquisition of knowledge is dependent upon this knowledge being made available to a child and therefore it is not a 'true' ability. However, if 'awareness of the world around' is regarded as a child's ability to comprehend a complex world, the distinction is surely a fine one. It may be that this comprehension and the background of general knowledge which accompanies it is more

dependent upon environmental factors than are many other facets of intellectual functioning; but this is a matter of degree rather than kind. In any event, there can be little doubt about its relevance to and association with educational progress.

The results for children in 'ordinary' maintained and independent schools are given in Table 11.

**Table 11.** Awareness of the world around

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Exceptionally well-informed for his age	189	3.4	112	2.1	301	2.8
Good background of general knowledge	1246	22.5	893	16.9	2139	19.8
Average in this respect	2471	44.7	2818	53.3	5289	48.9
Rather limited knowledge	1374	24.8	1275	24.1	2649	24.5
Largely ignorant of the world around him. Lack of general knowledge is a substantial handicap in school	251	4.5	191	3.6	442	4.1
Total rated	5531	100	5289	100	10820	100
No data	5		8		13	
GRAND TOTAL	5536		5297		10833	

Chi-squared (Trend) = 12.1;  $p < 0.001$

Chi-squared (Departure) = 95.1 (3 d.f.);  $p < 0.001$

The statistical test for linear trend shows a highly significant tendency for boys to be given higher ratings for this factor. Again, however, there was a highly significant departure from the linear trend.

The results indicate that whereas a higher proportion of boys than girls are felt by their teachers to have above average 'awareness of the world around' – the proportions were about 26 per cent and 19 per cent respectively – there is little or no difference in the proportions below average. In fact, what small difference there was in this latter category in the present sample was in the girls' favour.

(d) *Creativity*

There has been increased interest in recent years in the assessment of creativity, particularly at the secondary school level. It has been claimed that it is possible to measure and distinguish creative thought processes from the kinds of ability assessed by conventional tests of intelligence. No

**Table 12.** Teachers' ratings of creativity

Description of Ratings	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Shows marked originality or creativity in most areas	154	2.8	152	2.9	306	2.8
Usually produces good original work	806	14.6	983	18.6	1789	16.5
Shows some imagination or originality in most areas	2608	47.2	2565	48.5	5173	47.8
Little originality or creativity in all areas	1765	32.0	1456	27.5	3221	29.8
Never shows a trace of originality or creativity in any of his work	190	3.4	136	2.6	326	3.0
Total rated	5523	100	5292	100	10815	100
No data	13		5		18	
GRAND TOTAL	5536		5297		10833	

Chi-squared (Trend) = 42.5;  $p < 0.001$

Chi-squared (Departure) = 9.0 (3 d.f.);  $p > 0.05$  not significant

attempt is made in the present report to produce any fresh evidence on this topic; indeed it is open to question whether such relatively crude measures as ratings could do so. Nevertheless, within the context of the assessments made, it was felt that such a rating might prove a useful and interesting addition.

One of the principal difficulties in assessing creativity is its multi-dimensional character, and it can operate in many different spheres. One

can opt for a clearly defined area of creativity as, for example, in free written expression. However, to do so is to penalise those children with reading difficulties as well as to exclude those whose creativity manifests itself in other activities. To ask for a more global assessment carries the risk of reduced reliability and validity since the verbal descriptions of each point in the rating scale must be rather more general in nature. One way to escape from this dilemma is to ask for ratings of creativity in a number of well-defined fields. However, this would have been a further imposition upon the teachers' time, which was not felt to be justified.

It was finally decided to obtain a global assessment but to stress the generality of the rating by giving examples of the activities in which it was anticipated that creativity would be shown. In the Educational Assessment booklet, therefore, the heading 'Creativity' was followed by: '(e.g. in free writing, telling a story, handwork, painting, drawing, dramatic work).'

The results are shown in Table 12.

The difference between the distributions of ratings was statistically highly significant. The result indicates that, as assessed by this rating scale, girls of this age are felt by their teachers to show more evidence of creativity in school.

It will be noted that there was no statistically significant departure from this tendency, suggesting that the difference between the sexes is consistent at all levels of 'creative' ability.

## 5. BACKWARDNESS AND DIFFICULTIES IN SCHOOL

### (a) *Children receiving special educational help in ordinary schools*

Within the framework of the 'ordinary' school, the term 'special educational help' is here preferred to the more widely used 'special educational treatment'.

Children needing such help come within the broad definition of handicapped pupils categorised as 'educationally subnormal' (H.M.S.O., 1953), namely: 'pupils, who, by reason of limited ability or other conditions resulting in educational retardation, require some specialised form of education, wholly or partly in substitution for the education normally given in ordinary schools'.

This definition and its implications were further elaborated in 'Special Educational Treatment', and in 'Slow Learners at School', (H.M.S.O., 1946 and 1964). It was made clear that the definition is interpreted broadly and covers every kind of educational provision for children who 'need special help', even if this is only 'in certain parts of their work'. It was estimated in the former publication that about 10 per cent of the school population would fall into this category; of these, some 8 or 9 per

cent would be catered for in ordinary schools. These estimates related to 'registered pupils over the age of seven', but in fact excluded children of this age who were in infant classes; indeed, in a footnote it was indicated 'that special educational treatment is not normally required for infants unless they are so seriously retarded that they should attend a special school'. The statement is not in line with some more recent thought on this question; thus, 'a crucial time for getting to grips with backwardness is the last year of the infant school and the beginning of the junior school'. (Tansley and Gulliford, 1960)

In order to identify children with learning difficulties and to throw some light on the current situation in infant classes, it was decided to ask the head teachers of the children in the present cohort whether the children were currently receiving any special educational help in school; and, if they were not receiving it, whether they would benefit from such help.

The first question was phrased: 'Apart from anything which the class teacher may be able to do in the normal way, is the child receiving any help within the school because of educational or mental backwardness?' Of the 10,833 children in ordinary schools for whom the information is available, approximately 7 per cent of the boys (379) and 4 per cent of the girls (205) were receiving this help. The total proportion of children was thus over 5 per cent (584). The difference between the sexes in this respect was highly significant ( $p > 0.001$ ).

Of those who were not receiving any help, the head teachers were asked if they considered that the children 'would benefit from such help within the school at the present time'. A further 879 children (8 per cent) the head teachers considered would benefit. Of these, 541 (10 per cent) were boys and 338 (6 per cent) were girls. The difference between the sexes was again highly significant ( $p < 0.001$ ).

It is particularly important that the figures relating to the second question be viewed in relation to its precise wording. The term 'would benefit' (i.e. from special help) was used; the corresponding term in the definition of educational subnormality, quoted above, was 'require'. The former term was considered to be more acceptable to head teachers in the context of the present study: it would minimise their natural reluctance to 'label' a child prematurely; and it would afford them greater freedom to express an opinion which had regard above all else for the needs of the individual child. Substitution of the term 'require' would, it is felt, have reduced the number of children thus classified by schools.

In summary, more than 5 per cent of the children were already receiving special education help in infant classes and there was a further

8 per cent who, it was considered, would benefit from such help. The fact that more than 13 per cent of this sample could with advantage have been given such help stands in such marked contrast to the opinion expressed in the publication mentioned above (H.M.S.O., 1946), that there is clearly an urgent need to re-examine this issue.

The question of provision at the junior stage is discussed in sub-section (c) of the present section.

(b) *Children in need of special schooling*

The figures given at the beginning of this main section show that 48 (0.4 per cent) of the children were in special schools. It is likely that some of the 73 children in 'unclassified' schools were also receiving special schooling, but it is not possible to determine this at present since time does not permit individual re-scrutiny of the Educational Assessment booklets.

Of the children in ordinary schools, the head teachers were asked: 'Do you consider, irrespective of the facilities in your area, that the child would benefit *now* from attendance at a special school?' In their view, 2 per cent (219) of the children would have benefited; 2.6 per cent of the boys (144) and 1.4 per cent of the girls (75) were included in this category. The difference between the sexes was highly significant ( $p < 0.001$ ).

In terms of the total number of children who might have benefited from special schooling at the infant stage, the above must be considered as minimum figures; for a further 190 children (1.8 per cent) the head teachers felt unable to give a definite answer. This latter group would obviously have contained a proportion of 'borderline' cases.

In interpreting the situation, one must again weigh the effect of the term 'would benefit', used in this question. Nevertheless, it is felt that an affirmative answer about the need for transfer to a special school would not have been made by head teachers in respect of children still in infant classes without considerable forethought. The results would appear to reflect a need felt by the head teachers for earlier transfer to special schools than is currently the practice.

(c) *Children likely to need special educational treatment in future*

The term 'special educational treatment' is here used to denote special schooling as well as special educational help within an ordinary school.

As a separate question, the head teachers of all the children currently in ordinary schools were asked: 'Do you consider, irrespective of the facilities in your area, that the child is likely to need some form of special schooling or other special educational help within the next two years?' The number of children thus classified was 530 (approximately 5 per cent); 348 (6.3 per cent) of the boys were included in this total and 182

(3.4 per cent) of the girls. Once again, the difference between the sexes was highly significant ( $p < 0.001$ ).

There were a further 381 children (3.5 per cent) whose head teachers were not able to express a definite opinion as to their future needs. Again, there were more boys than girls: 243 (4.4 per cent) and 138 (2.6 per cent) respectively. This difference, too, was highly significant ( $p < 0.001$ ). It seems likely that the majority of these children would be 'borderline' cases.

The overall position is thus as follows:

- (i) Forty-eight (0.4 per cent of the sample) were already in special schools.
- (ii) Seventy-three children (0.7 per cent) were in 'unclassified' schools, some of whom may have been ascertained as handicapped and have been receiving 'special educational treatment'. Inspection of documents at a later stage will enable this situation to be clarified.
- (iii) Five hundred and thirty-three children (approximately 5 per cent) of the children in ordinary schools were said by their head teachers to be 'likely to need some form of special schooling or other special educational help within the next two years'. It must be made clear that this 5 per cent of children included the 2 per cent, mentioned in the previous sub-section, said to be currently in need of special schooling.
- (iv) There were an additional 381 children (3.5 per cent) whose head teachers were not able to commit themselves on the question of future needs.

If one totals the proportions of children in items (i) and (iii); and makes the assumption that the majority of the children in item (iv) were 'borderline' cases and approximately half of them would in fact need help, then one would conclude that about 7 per cent of the present sample were likely to need some form of 'special educational treatment' between the ages of 7 and 9 years. The assumption that the 3.5 per cent in item (iv) were 'borderline' cases is supported by the fact that three quarters of these children were rated as poor or non-readers by their teachers. A detailed scrutiny of the questionnaires at a later stage should enable a more precise estimate to be made.

However, at present there are three factors which prompt one to feel that the above estimate of 7 per cent should be regarded as a minimum figure. First, the fact that head teachers were asked in this question to predict the children's likely needs over a period of 2 years may have led to some reservations and a cautious approach which gave the child the benefit of any doubt.

Secondly, the possibility must be considered that the answers may

have been influenced by the presentation of the question. The head teachers were asked: 'Do you consider, irrespective of the facilities in your area, that the child (*a*) would benefit *now* from attendance at a special school' (already discussed in sub-section (*b*)); and '(*b*) is likely to need some form of special schooling or other special educational help within the next two years?' It will be seen that the juxtaposition of the two questions; the order in which they were asked; and the order of the two alternatives in the second question, may have predisposed head teachers to have the possibility of special schooling uppermost in their minds. Further, the nature of the 'other special educational help' was not made explicit, which may have led some head teachers to have in mind a narrower concept of possible provision than is now embraced by the term 'special educational treatment'.

Thirdly, the evidence from the head teachers' replies to the question relating to the children's current educational needs – discussed in sub-section (*a*) – suggests that the above estimate of 7 per cent should be seen as a minimum figure. It will be recalled that some 13 per cent of the children in the head teachers' opinions could with advantage have been given special educational help in ordinary schools. Although it is no doubt true that some of these children's need for help might have diminished or even disappeared by the time they transferred to junior classes, it is hardly credible that the proportion would have dropped so markedly—from 13 per cent to 7 per cent. One reason for this changed picture is likely to be the use of the term 'benefit from' (special help) in the earlier question and 'need' (special educational treatment) in the later one. It is arguable which of these terms best reflects the actual needs of children.

To summarise, then, it is estimated that at least 7 per cent of the children in the present sample were likely to 'need' some form of special educational treatment whilst they were from 7 to 9 years old. It is difficult to compare this figure with the estimates of the incidence of children requiring 'special educational treatment', made by the Ministry of Education (H.M.S.O., 1946), since these estimates give no indication of the incidence of multiple handicap. In particular, the definition of educationally subnormal pupils, quoted earlier, if strictly interpreted could include many of the children with other handicaps. In view of these complicating factors, all that can be said at the present stage is that our findings do not provide evidence on whether the figures given by the Ministry under- or overestimate the position.

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There is strong evidence from the present study to suggest that the phraseology used in defining children in need of special educational treatment is more crucial than may be realised.

(d) *Children referred to outside agencies*

The original reasons for including a question about referral to outside agencies were fourfold: to discover which children had been referred so that a more detailed study of the causes of referral could be made; to study the extent to which various agencies had been used; to discover the overall proportion of children who had been referred; and to test the hypothesis that more boys than girls would have been referred.

Although identification of the children concerned is straight-forward, a detailed study of the causes of referral and the use made of various agencies necessitates perusal and analysis of the individual Educational Assessment booklets and there has not yet been time for this. However, results are presented on the second two points.

The question was put to head teachers as follows:

Has the child, **because of difficulties which have affected his progress or behaviour in school**, been referred to your knowledge to any agency? (e.g. School Health Service, Child Guidance Clinic, School Psychological Service, Education Welfare Service or School Attendance Officer, Children's Department, General Practitioner, Private Specialist).

(Include referrals made at a routine medical examination, and any made by another school or by the parents, if known).

Where the answer was 'Yes', the head teachers were asked to state the agency/agencies involved and, briefly, the reasons for referral.

The number of children in the sample reported to have been referred was 1,127 (9.5 per cent). It will be evident that this should be seen as a minimum figure since there would have been a number of children falling into this category where the information was not available to the head teachers for various reasons.

Approximately 11 per cent of the boys (604) and 8 per cent of the girls (423) had been referred. The difference between the sexes in this respect was highly significant ( $p < 0.001$ ). This result, then, confirmed the hypothesis previously postulated.

## 6. SUMMARY

(a) Three criteria were used in assessing the children's reading ability: performance on a standardised test of word recognition (the Southgate Group Reading Test): the stage reached in the reading scheme used by the school; and the teacher's rating of reading ability on a five-point scale.

Judged by all three criteria, the girls were better readers than the boys. The differences were so marked and consistent that the generalisation is warranted that at this stage in their schooling, shortly before transferring

to junior schools and departments, girls are superior to boys in all aspects of reading ability.

A comparison was made between the results of the present study and a study conducted in 1954 (Morris, 1959). The tentative conclusion was reached that in the country as a whole, the number of poor and non-readers transferring to junior classes has dropped in the interval from 1954 to 1965.

Approximately 47 per cent of the present sample had in the final stage of infant schooling not reached a stage where they could make optimal progress without further specific help in the acquisition of basic reading skills. About a fifth of these children (10 per cent of the present sample) had barely made a start with reading. It was clear that given the present age of transfer, junior schools and departments have to be prepared and equipped to continue the specific teaching of reading skills to a substantial proportion of their first year children.

(b) Two assessments were made of ability in number work: performance in a Problem Arithmetic Test designed for the present study; and a teacher's rating of number work on a five-point scale which stressed insight and understanding, rather than mechanical or rote ability.

There was evidence that in problem arithmetic ability, as assessed by this test, boys of this age are superior to girls. There was evidence from the analysis of the teachers' ratings, too, of superior ability amongst boys; but here the indications were that there are more boys of above average ability and no difference between the sexes in the proportions below average.

This variation in the results obtained may have been due to the nature of the two assessments or to the different aspects of arithmetical ability assessed.

(c) Ratings were also obtained from the teachers of the children's 'oral ability', 'awareness of the world around' and 'creativity'.

As rated by teachers, girls manifest better 'oral ability' than boys, and there were indications that this tendency is more marked in the children of below average 'oral ability' than those above average.

Boys are felt by their head teachers to have more 'awareness of the world around' than girls but this difference between the sexes appears to be confined to the children rated above average.

Compared with boys, girls show evidence at this age of superior 'creativity' as rated by their teachers.

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In view of the statement (H.M.S.O., 1946) that 'special educational treatment is not normally required for infants unless they are so seriously retarded that they should attend a special school', the present findings indicate a need to re-examine this matter.

(e) Approximately 0.4 per cent of the sample were known to be in special schools. Of the children in ordinary schools, head teachers considered that about 2 per cent would currently have benefited from special schooling. For a further 1.8 per cent the head teachers did not feel able to express a definite opinion. These results appeared to reflect a need felt by the head teachers for earlier transfer to special schools than is the practice at the present time.

(f) It was estimated on the basis of head teachers' opinions that at least 7 per cent of the present sample were likely to need special educational treatment whilst they were between the ages of seven and nine years. However, there were a number of complicating factors and it was not possible to draw any conclusions about the accuracy of estimates previously made (H.M.S.O., 1946).

There was evidence that when head teachers' opinions are sought on the question of special educational treatment, the precise terminology used is of more importance than may be realised. If it is asked whether children 'would benefit' from such provision, the proportion of children included is likely to be higher than if the term 'need' (and, probably, 'require') is used. It is arguable which of these terms is most appropriate.

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## B. School Variables

### 1. Introduction

All the information gathered in this project was judged to have possible relevance to the development of individual children. Some of the data

described characteristics of the schools and it is intended at a later stage to test certain hypotheses concerning associations between these characteristics and the development of the children.

In this section descriptive statistics are presented for those school variables upon which little or no information is available from other sources. It must be emphasised here that the study is concerned essentially with a representative sample of children and not of schools. Thus, the data cannot be used to answer this kind of question: 'What proportion of schools catering for seven-year-olds have parent-teacher associations?'. However, the data can answer the question: 'What proportion of seven-year-olds are in schools which have a parent-teacher association?'. There may in fact be little or no difference between the answers to the two kinds of question; but where the characteristic being considered is related to the size of the school there will be a difference since larger schools contribute more children to the cohort than smaller ones.

The 10,833 children for whom information is given in this section were all in maintained infant, junior with infants or all-age schools, or in independent schools catering wholly or mainly for children who are not handicapped. The actual numbers in each type of school are detailed in the introduction to Section VA: 'Educational Factors'. In one sub-section (5) the results for a smaller sample of children had to be used for reasons which are mentioned in this sub-section.

## *2. Contact between schools and parents*

Of course, the most important contacts made are those in which parents discuss their children with the teacher or head teacher. This topic is specifically dealt with in Section VF: 'Environmental Factors'.

In this sub-section the emphasis is upon organised and relatively more formal contacts between the school and the parents. Nevertheless, these also create opportunities for informal discussion. There is a wide range of school activities and occasions in which parents may participate. An attempt was made to seek information about those contacts which might best reflect the general tenor of the relationship between the school and the home; also those which at a later stage of analysis might afford some measure of discrimination between schools which chose – or were able – to foster actively the interest and involvement of the parents in the school's work. Even within this general area a rigorous selection of questions had to be made to achieve a reasonable balance between the various educational aspects to be studied.

Four questions were put to schools, and the results are detailed in Table 13.

In view of the statement (H.M.S.O., 1946) that 'special educational treatment is not normally required for infants unless they are so seriously retarded that they should attend a special school', the present findings indicate a need to re-examine this matter.

(e) Approximately 0.4 per cent of the sample were known to be in special schools. Of the children in ordinary schools, head teachers considered that about 2 per cent would currently have benefited from special schooling. For a further 1.8 per cent the head teachers did not feel able to express a definite opinion. These results appeared to reflect a need felt by the head teachers for earlier transfer to special schools than is the practice at the present time.

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## *2. Contact between schools and parents*

Of course, the most important contacts made are those in which parents discuss their children with the teacher or head teacher. This topic is specifically dealt with in Section VF: 'Environmental Factors'.

In this sub-section the emphasis is upon organised and relatively more formal contacts between the school and the parents. Nevertheless, these also create opportunities for informal discussion. There is a wide range of school activities and occasions in which parents may participate. An attempt was made to seek information about those contacts which might best reflect the general tenor of the relationship between the school and the home; also those which at a later stage of analysis might afford some measure of discrimination between schools which chose – or were able – to foster actively the interest and involvement of the parents in the school's work. Even within this general area a rigorous selection of questions had to be made to achieve a reasonable balance between the various educational aspects to be studied.

Four questions were put to schools, and the results are detailed in Table 13.

**Table 13.** Contact between schools and parents

N = 10,833

	N	Per cent
The number of children at schools which had a parent/teacher association	1861	17.2
The number of children at schools where meetings were arranged for parents, by school or association, on educational matters	6668	61.6
The number of children at schools where any social functions were organised for parents	5628	52.0
The number of children at schools where parents provided substantial help for the school in money, kind or labour	5788	53.4

Although these results are given in one table, it will be appreciated that the questions were not mutually exclusive. The numbers in each category are expressed as a percentage of 10,833.

It is clear that the majority of the schools in this sample preferred to establish contacts with parents without the more formal framework of a parent/teacher association.

### 3. *Introduction to school*

It is the practice of some head teachers to allow pre-school children to spend some time in the school before they actually start. Many people consider that this has much to commend it. It goes some way towards lessening any anxiety felt by children as they approach what is for them a new world.

Whether the practice is adopted will depend upon a number of factors, amongst which the staff/pupil ratio is likely to be very important. In this sample, the schools of 3,443 children (approximately 32 per cent) were in fact using some form of 'introductory attendance'.

### 4. *Allocation of children to classes*

The question of the allocation of children to classes is more complex than would at first appear. It might seem that children are either 'streamed' by ability – however this is assessed – or they are not. Instead one is faced not with two possibilities but with a continuum. At one end of this continuum would lie those schools in which the head teacher feels that the best class grouping is one which achieves the greatest heterogeneity in terms of the children's ages and abilities. Infant school head teachers who adopt this approach place children from 5 to 7 years old in the same

class, deliberately setting out to achieve a wide ability and age range. Such a practice is sometimes referred to as 'family grouping'.

At the other end of the continuum are head teachers who feel that the more homogeneous the class, the better is the teacher able to meet the needs of the children. Such a head teacher would 'stream' by ability, where possible.

In between these two positions are a large variety of situations: for example, all the infants may be in one class, so that a heterogeneous group is inevitable; or children may be allocated to classes by age, in which case a measure of homogeneity is sought. Even between classes formed in the same overt way, there will be differences in approach on the part of the teachers which will reflect in some measure their attitudes – or those of the head teachers – towards this question.

Enough has been said to outline some of the difficulties in assessing what is basically an educational approach or an attitude. All that was

**Table 14.** Formation of class

	N	Per cent
One class only for all 'infants'	53 <sup>1</sup>	4.9
A deliberate cross-section by age and ability of more than one year group of children – sometimes called 'family grouping'	576	5.3
By age in year groups (e.g., one class per year, or parallel classes)	4122	38.1
Selected by age within the year group (e.g., children born in the first half of the year in one class, and the remainder in another)	3738	34.6
'Streamed' by ability or attainment	An upper ability (or attainment) class within the school	
	402	3.7
	A middle ability (or attainment) class within the school (e.g. of three classes)	
	171	1.6
	A lower ability (or attainment) class within the school	
	220	2.0
Other arrangements	1057	9.8
Total answered	10817	100
No data	16	
GRAND TOTAL	10833	

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Enough has been said to outline some of the difficulties in assessing what is basically an educational approach or an attitude. All that was

**Table 14.** Formation of class

	N	Per cent
One class only for all 'infants'	531	4.9
A deliberate cross-section by age and ability of more than one year group of children – sometimes called 'family grouping'	576	5.3
By age in year groups (e.g., one class per year, or parallel classes)	4122	38.1
Selected by age within the year group (e.g., children born in the first half of the year in one class, and the remainder in another)	3738	34.6
'Streamed' by ability or attainment	An upper ability (or attainment) class within the school	
	402	3.7
	A middle ability (or attainment) class within the school (e.g. of three classes)	
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	A lower ability (or attainment) class within the school	
	220	2.0
Other arrangements	1057	9.8
Total answered	10817	100
No data	16	
GRAND TOTAL	10833	

possible in the present study was to obtain relatively crude information on the method of allocation to classes. It was felt, nevertheless, that these data, despite their limitations, would be valuable since no other information appears to have been published in this country on pupils' allocation to classes at the infant stage.

It will be seen that the majority of the children (about 73 per cent) were allocated to classes by age: in year groups, or selected by age within the year group. Approximately 7 per cent were overtly 'streamed' by ability or attainment. However, there was a further 10 per cent of children in classes formed by 'other arrangements'. It seems likely that in the majority of these classes an attempt was being made to achieve some kind of homogeneous grouping; for example, by promoting brighter children to a higher class or holding back the less able.

The nature of these 'other arrangements' has been detailed by the schools but at this stage time does not permit an analysis of the replies.

#### 5. AGE OF STARTING FULL-TIME INFANT SCHOOLING

There has been increasing interest of late in the association between date of birth and educational performance. Younger children in any school year group appear to be at a disadvantage compared with the older ones (Pidgeon, 1965).

There is clearly more than one factor operating here, but an important one would seem to be the length of schooling obtained. The age at which children are admitted to infant schools in England varies between education authorities and also within authorities from year to year depending upon the provision available in relation to the numbers of children approaching the age of 5. Two years is the minimum period normally spent in an infant school or department, but children are in some areas admitted at 4 years of age, provided that they will become 5 before the start of the next term, whilst in others an earlier start than this is possible. In some cases, therefore, a much longer period than 2 years is spent in school before transfer to a junior school or department.

Thus, although the children in the present sample are virtually all of the same age, it was known that there would be differences in the length of schooling received prior to the present educational assessment. In Section VIB the relationship between the age of starting full-time infant schooling, educational performance and social-adjustment at 7 years of age is examined.

Here, the numbers of children starting full-time infant schooling at different ages is presented. It will be noted that the total number of children (5,805) is much smaller than elsewhere in this section.

There are a number of reasons for this. First, it was only possible to

include children for whom a Parental Questionnaire had been received when the data processing was commenced, because the information about the age of starting school was obtained from the mothers. Secondly, children are included only where it was known that they had not attended a nursery school or class since it was felt that children who had had nursery schooling might as a group be atypical in this context; furthermore, it would in some cases be difficult to determine when nursery schooling ceased and infant schooling commenced.

Another fact to be noted is that the figures detailed below are abstracted from a larger table, not included in this report, which includes a breakdown of the figures in relation to the Occupational Group of the father. Thus, children for whom this information was not available, including those in families where there was no male head of the household, are grouped together with those who started school outside the limits of the three age groupings for which numbers are detailed.

**Table 15.** Age of starting full-time infant schooling

	N	Per cent
4 years to 4 years 5 months	75	1.3
4 years 6 months to 4 years 11 months	2772	47.8
5 years to 5 years 5 months	2505	43.2
Started school outside these limits or Occupational Group of father not known	448	7.7
Total information	5800	100
No data	5	
GRAND TOTAL	5805	

The results indicate that nearly half of this sub-sample started school when they were between 4 years 6 months to 4 years 11 months old. The great majority of these would have started school in January, 1963, since they were 5 years old in March of that year. Over 43 per cent would have started school at the beginning of the following term.

In assessing the reliability of these figures and the extent to which they may be representative of the situation in the country as a whole, a number of factors should be borne in mind.

First, the fact that those children who could not be classified by the Occupational Group of their fathers are included with those who started school outside the three specified age groupings will depress the

possible in the present study was to obtain relatively crude information on the method of allocation to classes. It was felt, nevertheless, that these data, despite their limitations, would be valuable since no other information appears to have been published in this country on pupils' allocation to classes at the infant stage.

It will be seen that the majority of the children (about 73 per cent) were allocated to classes by age: in year groups, or selected by age within the year group. Approximately 7 per cent were overtly 'streamed' by ability or attainment. However, there was a further 10 per cent of children in classes formed by 'other arrangements'. It seems likely that in the majority of these classes an attempt was being made to achieve some kind of homogeneous grouping; for example, by promoting brighter children to a higher class or holding back the less able.

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Another fact to be noted is that the figures detailed below are abstracted from a larger table, not included in this report, which includes a breakdown of the figures in relation to the Occupational Group of the father. Thus, children for whom this information was not available, including those in families where there was no male head of the household, are grouped together with those who started school outside the limits of the three age groupings for which numbers are detailed.

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In assessing the reliability of these figures and the extent to which they may be representative of the situation in the country as a whole, a number of factors should be borne in mind.

First, the fact that those children who could not be classified by the Occupational Group of their fathers are included with those who started school outside the three specified age groupings will depress the

percentage figures for these groupings. However, the effect of this has been checked; it is minimal and does not alter the overall position.

Secondly, the information was obtained from the mothers and some may have had difficulty in recalling an event which occurred 2 years earlier in terms of the age categories detailed above. As against this, the question was put by health visitors – or another officer of the local authority – who would have helped mothers, where necessary, with this ‘calculation’. Of course, health visitors are likely to be familiar with local practice.

Thirdly, the school year 1962–63 was a difficult one for schools and authorities because of the effect of increasing the training college courses for teachers from 2 to 3 years at this time. The consequent acute shortage of staff may have forced some schools to take children later than was their usual practice.

For these reasons, then, the figures should be viewed with some caution. However, despite these reservations, the suggestion by Pidgeon and Dodds (1961) that, ‘There is a general, but not universal, rule in this country that children start formal schooling at the beginning of the term in which they will become 5 years old’ clearly needs re-examination in the light of our findings.

## 6. AGE OF COMMENCING PHONICS IN READING

There is a wide variety of possible approaches to the introduction and subsequent teaching of reading. In this study one particular aspect was selected for closer investigation; namely the stage at which a systematic attempt is made to introduce children to the sounds of individual letters or phonemes. The introduction of ‘phonics’ – as this is customarily termed – is made much earlier in the reading programme in some schools than in others.

There has been – and still is – considerable debate amongst schools and in educational circles generally, about the age at which phonics should be systematically taught. To say that the right time is when the individual child is ‘ready’ is to avoid the issue in the absence of any universally agreed or well-validated criteria as to what constitutes readiness.

This study cannot claim to throw any new light of an experimental nature upon this question. However, it can give information, hitherto not available, about the age at which this systematic introduction is in fact commenced in schools. Although this report is concerned with children in England, it was felt that comparative figures for Wales and Scotland would be of interest in this particular context. The results are given in Table 16 and reproduced in graph form in Figure 2.

It will be seen that there are a substantial number of 'Don't knows' in this table. This was expected since the data for most of the children were retrospective and staff changes, as well as changes of school by the children, will have meant that information on this question was sometimes unobtainable. However, there is no reason to believe that if the information for these children had been available, it would have differed in over-

**Table 16.** Age at which the systematic teaching of phonics (i.e. letter sounds) was commenced in school

N=13,018

	ENGLAND		WALES		SCOTLAND	
	N	Per cent	N	Per cent	N	Per cent
Under 5 years of age	357	3.7	78	11.6	26	1.9
From 5 years to 5 years 5 months	2438	25.6	232	34.4	697	52.2
From 5 years 6 months to 5 years 11 months	3134	32.9	153	22.7	541	40.6
From 6 years to 6 years 5 months	1980	20.8	110	16.3	56	4.2
From 6 years 6 months to 6 years 11 months	1069	11.2	63	9.3	9	0.7
From 7 years to 7 years 5 months	128	1.3	8	1.2	1	0.1
Not commenced	425	4.5	30	4.5	4	0.3
Total information	9531	100	674	100	1334	100
Don't know	1293		67		108	
No data	9		1		1	
GRAND TOTAL	10833		742		1443	

Chi-squared (Trend) England : Wales = 38.0;  $p < 0.001$

Chi-squared (Trend) England : Scotland = 452.6;  $p < 0.001$

all pattern from that obtained for the rest of the children. Thus, it was felt appropriate to exclude 'Don't know' replies from the percentaging.

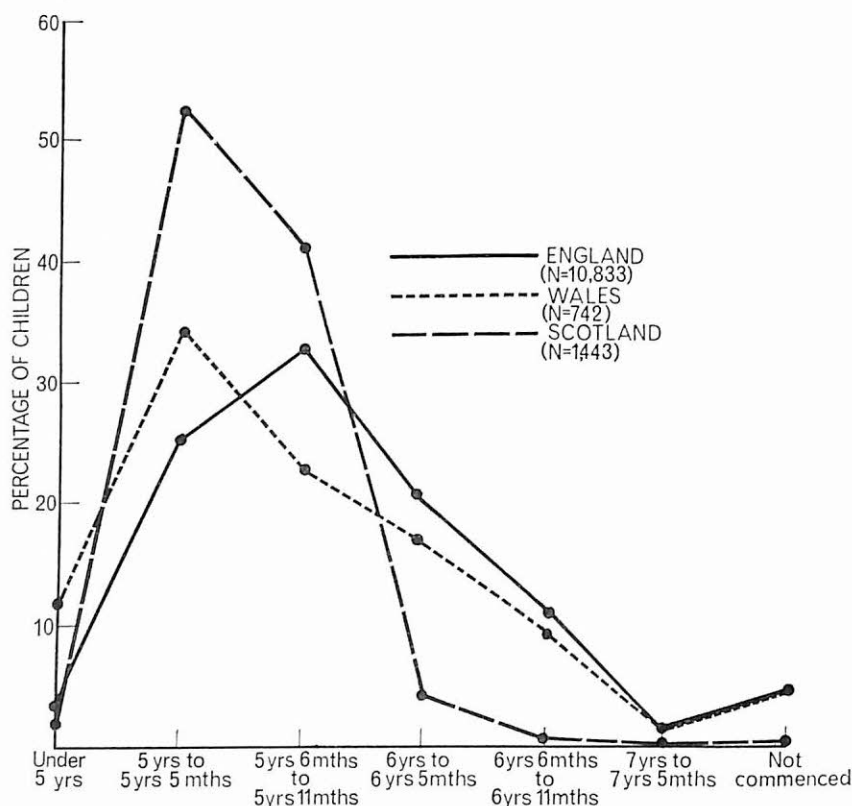
The differences between the three countries are marked and interesting. The English pupils were introduced to phonics at a later age: the peak age for its introduction in the English schools was from 5 years 6 months to 5 years 11 months, whilst in Wales and Scotland the corresponding age was from 5 years to 5 years 5 months. The differences in the

distribution, both between England and Wales and between England and Scotland, are highly significant statistically. Phonics had been taught to about 54 per cent of the children for whom this information was available in Scottish schools before the age of 5½, and to 46 per cent of the children in Welsh schools; the corresponding percentage for the children in England was about 29 per cent.

**Figure 2.** Age at which the systematic teaching of phonics (i.e. letter sounds) was commenced in school

(English, Welsh and Scottish children in 'ordinary' maintained and independent schools)

N = 13,018



Since no teacher would commence teaching phonics before she considered a child was ready for this step, it would appear that the teachers in Wales and Scotland considered their pupils to be ready at an earlier age than their colleagues in England. It is interesting to speculate whether there are any real differences in the children's degree of readi-

ness or whether tradition or teacher training courses are responsible. Or perhaps a combination of these? Additionally, some of the Welsh children were Welsh speaking and would have been taught to read in that language, which may lend itself to a more phonic approach than English.

Apart from the difference between the children in English schools and those in Wales and Scotland in relation to the age at which phonics were introduced, there is also evidence of more variability in the English and Welsh samples than in the Scottish. Both of these findings may be a reflection of more uniformity in Scotland, if this is the case, in the age of starting school.

#### 7. AGE OF COMMENCING 'FORMAL' WRITTEN ARITHMETIC

There have been considerable changes in many infant schools during recent years in the approach to number work. An increasing use of the

**Table 17.** Age at which 'sums' (i.e. 'formal' written arithmetic) was introduced in school

N = 13,018

	ENGLAND		WALES		SCOTLAND	
	N	Per cent	N	Per cent	N	Per cent
Under 5 years of age	78	0.8	24	3.5	4	0.3
From 5 years to 5 years 5 months	1525	15.9	192	28.2	182	13.7
From 5 years 6 months to 5 years 11 months	4073	42.5	245	36.0	825	61.9
From 6 years to 6 years 5 months	2340	24.4	137	20.1	250	18.8
From 6 years 6 months to 6 years 11 months	1007	10.5	57	8.4	62	4.7
From 7 years to 7 years 5 months	136	1.4	14	2.1	1	0.1
Not commenced	426	4.4	12	1.8	8	0.6
Total information	9585	100	681	100	1332	100
Don't know	1239		60		110	
No data	9		1		1	
GRAND TOTAL	10833		742		1443	

Chi-squared (Trend) England : Wales = 54.0;  $p < 0.001$

Chi-squared (Trend) England : Scotland = 96.8;  $p < 0.001$

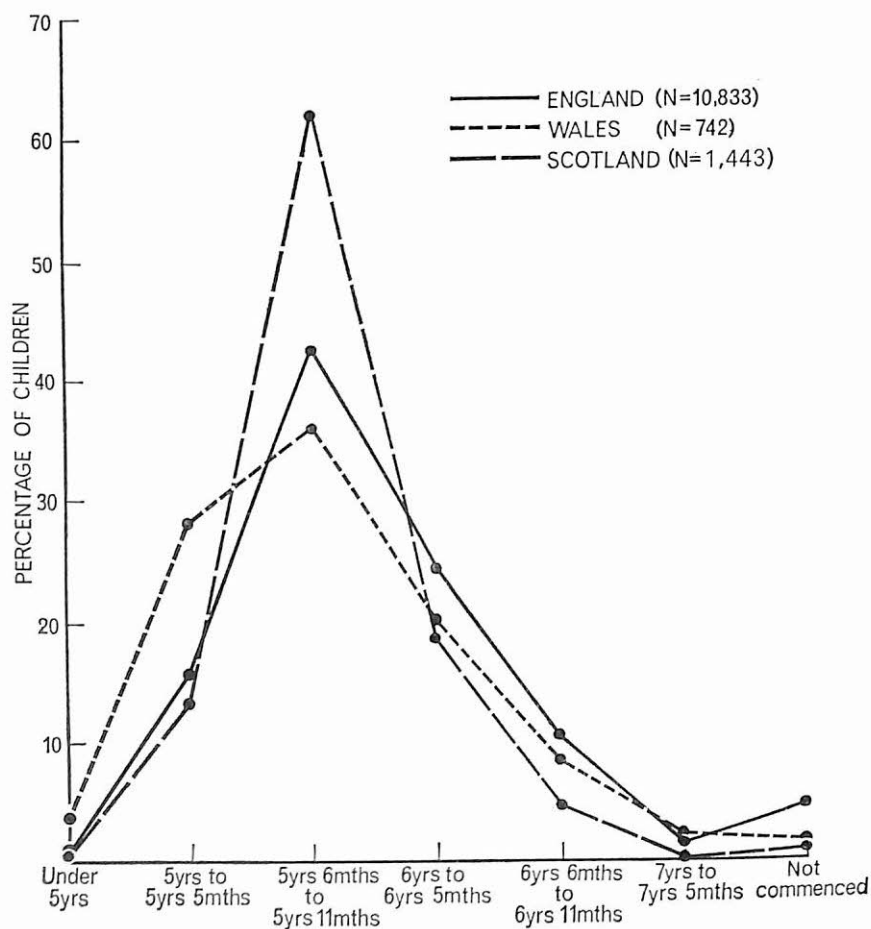
term 'number work' or even 'mathematics' in place of 'arithmetic' or 'sums' is symptomatic of this change and the wider approach adopted in some schools. One accompaniment of the change has often been the introduction of 'formal' written arithmetic at a later stage.

Again, a comparison of the practice in England, Scotland and Wales is made. The results are presented in Table 17 and in graph form in Figure 3.

**Figure 3.** Age at which children were introduced to 'sums' (i.e. 'formal' written arithmetic) in school

(English, Welsh and Scottish children in 'ordinary' maintained and independent schools)

N = 13,018



As in Table 16 there are a substantial number of 'Don't knows' and for the same reason, discussed in the previous sub-section, they have been excluded from the percentaging.

In English schools pupils were introduced to 'sums' at a later age than their peers in Wales and in Scotland. The difference between the practice in the English and Welsh schools seems to centre on the fact that more of the children (approximately 32 per cent) in the latter schools had reached this stage before  $5\frac{1}{2}$  years of age than in England (approximately 17 per cent).

One apparent difference in practice among the Scottish schools as reflected in this sample of children is in their greater uniformity. Thus, although the peak period for the commencement of 'formal' written arithmetic was between 5 years 6 months and 5 years 11 months in all three countries, well over half (about 62 per cent) of the Scottish sample reached this stage during this 6 month period, whereas in England and Wales the corresponding percentages were about 43 per cent and 36 per cent. This may be a reflection of more uniformity in Scotland, if this is the case, in the age of starting school.

#### 8. SUMMARY

- (a) Whilst the majority of the children were at schools in which there was some form of organised contact between the school and the parents, most schools established these contacts without the framework of a parent/teacher association.
- (b) About one third of the children attended schools in which the head teachers adopted the practice of allowing pre-school children to spend some time in the school before actually starting.
- (c) The allocation of children to classes was done mainly on an age basis. It appeared that about half of the children were in classes where an attempt had been made to achieve a degree of homogeneity by some form of selective grouping, based on age within the year group, on ability, or by some other arrangement. Only 7 per cent of the children were in 'streamed' classes.
- (d) The results indicated that of those children who had had no nursery schooling, nearly half started school when they were aged 4 years 6 months to 4 years 11 months; the great majority of these would have commenced at the beginning of the term in which they attained the age of 5. The mothers' reports showed that over 43 per cent of the children commenced school at the beginning of the following term. The school year 1962-63 may have been untypical because of the

particularly acute shortage of teachers, due to the lengthening of the teacher training college courses at that time.

- (e) A comparison was made between the practice in England and that in Wales and in Scotland in relation to the age at which the systematic teaching of 'phonics' was commenced with these children and also the age at which 'sums', or 'formal' written arithmetic was introduced. The evidence was that pupils in English schools are introduced to both these aspects of their school work at a later age than those in Wales and Scotland. In all three countries a majority of the children had commenced 'formal' written arithmetic and were receiving some systematic teaching of 'phonics' before the age of 6. There was also evidence of more uniformity of practice in Scotland than in Wales or England in both these spheres.
- (f) In varying degrees all the questions here discussed have relevance to the educational development of children; it is therefore somewhat surprising that there is an almost complete lack of comparable information from other sources, particularly on a national basis. Such information is relatively straightforward to collect; moreover, if gathered at regular intervals it would be valuable to individual schools and teachers, to administrators and to those with responsibility for the training of teachers; also it would reflect changing practice and act as a stimulus to further change.

### References

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## C. Medical and physical factors

### 1. INTRODUCTION

This part of the Study is concerned with some aspects of the physical and medical status of the sample children. The information contained in this and in the following two sections (V D and V E) is based upon data from approximately 8,000 Parental and Medical Questionnaires received by the middle of August, 1965. The total number of children for whom information is available differs slightly in different tables. This is due to certain minor technical considerations, including the fact that the data in this and the following two sections were divided among four different

punched cards. The data were derived from a general and systemic medical history gathered from the mother (see Parental Questionnaire pp. 13 to 19: Appendix 2) and from the results of examinations by school medical officers (see Medical Questionnaire pp. 6 to 13 Appendix 2).

(a) *Medical history*

The design of this part of the enquiry is discussed in Section III D. Information was sought on a wide variety of conditions, and recorded on a pre-coded form. A positive reply to a question on whether the child suffered from a given condition led the interviewer to ask about age of onset, recent history or other specified details. These data are sometimes retrospective and with attendant possibility of bias. These considerations are discussed in more detail in the Introduction to Section V E: 'Medical and Developmental Sex Comparisons'.

(b) *Medical examination*

A special problem was posed in the design of the Medical Questionnaire on which the results of the medical examination were to be recorded. It is known that analysis of school medical records yields gross fluctuations in incidence, suggesting very wide variations in interpretation. The pattern of the questionnaire therefore differed from that used for routine school records, though every effort was made to avoid complicated format. The medical practitioners who conducted the examinations consisted almost entirely of school medical officers who are probably more experienced in technique of routine examination of children than any other section of the medical profession. With the exception of certain tests of special senses, it was therefore unnecessary to specify the *manner* in which the clinical examination should be carried out. The specially framed questions provided an objective determination of the current physical and medical status of the children. Any enquiry asking only for defects or abnormal findings to be noted would have allowed preconceived notions of normality to govern the decision whether or not an observation should be recorded. Therefore within each system the medical examiner was asked to indicate a positive or negative response to the presence of specified conditions. Care was taken as far as possible to avoid questions inviting varying interpretations or subjective responses. For many specified conditions further details were enquired for special analysis. The doctor was also asked to comment upon any residual abnormality in each system examined.

In the main, therefore, facts rather than opinions were sought. However, clinical assessments were also included in certain fields, notably the special senses, to allow subsequent comparison with test results. Specific tests of special senses, laterality or coordination were

mostly derived from existing tests of proven value in clinical practice. In order to maximise comparability of results among a large number of examiners, it was necessary to define the conditions of special tests in detail on the questionnaire (see Appendix 2).

### (c) *Interpretations*

The medical and physical data on this incomplete sub-sample justify only tentative conclusions. For instance it is known that the children involved in these 'early returns' are biased in family Occupational Group compared with 'late returns'. Moreover, those 'early returns' with Parental and Medical assessments show better reading and social adjustment than children for whom only Educational information was available (see Section II: 'Description of the Sample'). Although the overall bias is not marked it may become relevant when individual incidences or distributions in this sub-sample of 'early returns' are considered. Bias would be particularly important if a given physical factor is not associated with normal social circumstances, educational progress or behaviour and adjustment. Time has not permitted a comparison of the sub-sample of 'early returns' with the 'late returns' for any medical or physical factors. The possibility exists, for example, that the sub-sample does not contain a representative proportion of physically handicapped children. The present report therefore deals with tests of special senses and with incidences of minor physical abnormality rather than with severe handicaps or major conditions requiring special treatment or education. A later report will present physical data including height and weight, correlations between current physical status and perinatal information obtained on the children at birth from the Perinatal Survey of the National Birthday Trust Fund, and also relationships between current educational and medical status of the cohort.

## 2. SPEECH

### (a) *Introduction*

Information was sought from the mother on a number of speech difficulties to which the child might have been subject; and the medical examiner used a speech test, noted any stammer and assessed the intelligibility of the child's speech.

### (b) *History and Examination*

The results of the history and examination are summarised in Table 18.

**Table 18.** Speech: summary of history and examination

Number of Boys = 4053; Number of Girls = 3933; Total = 7986

	Incidence per cent			Sex difference	
	Boys	Girls	Total	Chi-squared (1 d.f.)	P value
History of stammer or stutter	7.9	4.5	6.2	40.2	< 0.001
History of any other speech difficulty	11.5	8.5	10.0	20.0	< 0.001
Any stammer observed on examination	1.3	0.8	1.1	4.9	0.05 > <i>p</i> > 0.01 not sig.
Speech not fully intelligible on testing	16.2	11.4	14.0	39.5	< 0.001

The detailed tables from which the above results are summarised are in Appendix 1 (Tables A39, A40, A44, A45).

The superiority of girls over boys in speech function is amply demonstrated in the above table. Three of the sex differences are highly significant and the fourth is in the same direction, although it fails to reach the 1 per cent level of significance.

Fewer girls than boys were reported to have attended Speech Therapy Clinics (Table A33 : Appendix 1), again suggesting superior speech function. However, both this sex difference and that in 'history of other speech difficulty' (Table 18) may simply have resulted from later speech development in boys, since more girls were reported by their mothers to have been talking (i.e. 'joining two words') by the age of 2 years (Table A35; Appendix 1).

The *overall incidence* as opposed to sex comparisons of speech difficulty in Table 18 should be regarded with particular caution in view of the retrospective nature of the information and any bias in this sub-sample.

It should also be noted (Appendix 1, Tables A39 and A40) that in the great majority of children in whom some stammer was observed, the handicap was slight; and likewise for any lack of intelligibility on testing of speech.

### (c) *Speech test*

The sentences used in this speech test were composed of words chosen to demonstrate the commonest defects of speech in children (Sheridan, 1945, 1965). When applied by a large number of medical examiners the

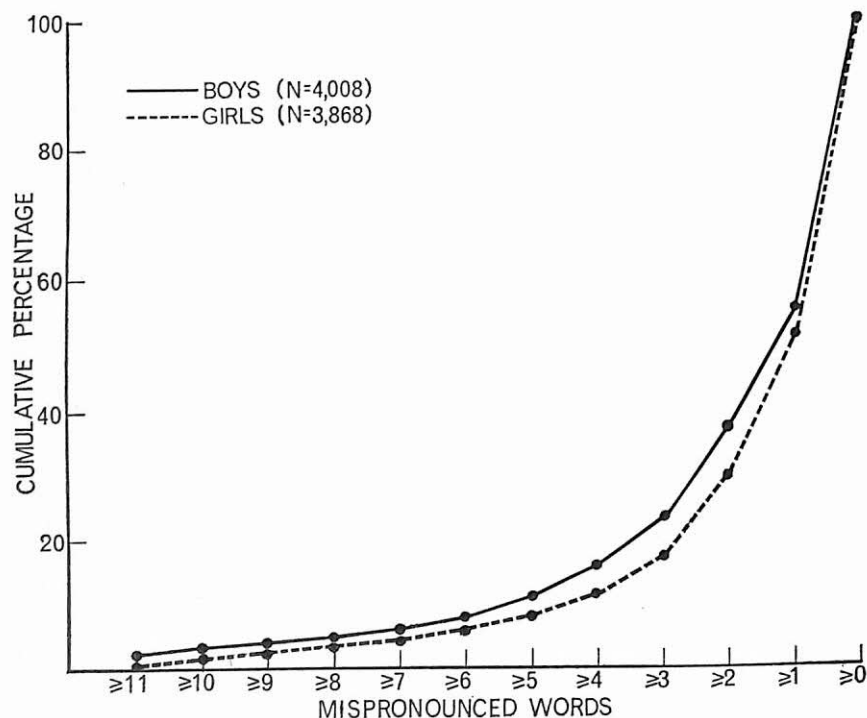
test can be expected to produce somewhat less reliable results than it would in the hands of those with specialised knowledge of speech development.

**Table 19.** Speech test results

Mispronounced words	11	10	9	8	7	6	5	4	3	2	1	0
Cumulative frequencies:												
Boys	78	109	136	174	242	314	448	643	942	1467	2175	4008
Girls	43	65	87	117	153	224	305	442	684	1148	1906	3868
Cumulative percentages:												
Boys	1.9	2.7	3.4	4.3	6.0	7.8	11.2	16.0	23.5	36.6	54.0	100
Girls	1.1	1.7	2.2	3.0	4.0	5.8	7.9	11.4	17.7	29.7	49.3	100

Chi-squared (Trend) = 30.6;  $p < 0.001$

**Figure 4.** Speech test



Six sentences were used in the test. The child was asked to repeat each one after the examiner, who noted any mis-pronounced words and recorded the total number of errors (see Appendix 2, page 243).

Cumulative percentages are shown in Table 19 and presented in graph form in Figure 4. Both the table and the figure are based upon the children ( $N=7876$ ) for whom this information was available when the data were processed.

A trend test for sex difference in the proportion of mis-pronounced words in Table 19 confirms a superior performance in girls.

### 3. VISION

#### (a) *Introduction*

Information presented here on the children's vision includes the results of visual acuity testing, of a reported history of squint, of evidence of squint on examination and of a clinical assessment by the examining doctor of the severity and educational implications of any observed visual defects.

One objective of the present study was to obtain representative national figures using defined procedures, although it was an inevitable drawback that many examiners had to be used. Later, it is hoped to present fresh methods of classification as published figures suggest gross variability in the way visual defect is assessed and reported. Thus, the incidences quoted by individual local authorities for visual defects in school children of all ages ranged in 1963 from 1.38 per cent to 25.2 per cent (H.M.S.O., 1964). In 1961 (H.M.S.O., 1962) the reported incidence of squint varied from 0.045 per cent to 10.6 per cent.

#### (b) *Visual Acuity*

A standard Snellen test chart of block capitals was specified for the vision test and instructions were given in the Questionnaire on the conditions of the test as well as for the procedure to be adopted when a child did not know the letters in the chart. Each eye was tested separately without glasses and also with glasses if these were worn.

Table 20 shows the visual acuity in each eye of all the children in this sample for whom this information was available, when tested without glasses. The number of children for whom results are presented differs very slightly for the right eye and the left in Table 20 and in the following two tables due to difficulties in processing the data.

A sex difference was tested for each eye separately and the results were as follows (see Appendix 1, Table A42 and A43 for distributions):

*Left eye*Chi-squared (Trend) = 0.5;  $p > 0.05$  not significantChi-squared (Departure) = 7.5 (6 d.f.);  $p > 0.05$  not significant*Right eye*Chi-squared (Trend) = 0.0;  $p > 0.05$  not significantChi-squared (Departure) = 6.2 (6 d.f.);  $p > 0.05$  not significant

As will be seen no significant sex differences were found.

**Table 20.** Uncorrected vision (i.e. without glasses)

(All children)

	Right eye		Left eye	
	Cumulative Frequencies	Cumulative Percentages	Cumulative Frequencies	Cumulative Percentages
Less than 6/60 or blind	13	0.2	8	0.1
6/60 and less	34	0.4	27	0.3
6/36 and less	78	1.0	67	0.8
6/24 and less	139	1.8	135	1.7
6/18 and less	236	3.0	246	3.1
6/12 and less	440	5.6	454	5.7
6/9 and less	1319	16.7	1333	16.9
6/6 and less	7916	100	7897	100
	Percentage with 6/6 vision = 83.4		Percentage with 6/6 vision = 83.2	

**Table 21.** Vision of children who never wear glasses

	Right eye		Left eye	
	Cumulative Frequencies	Cumulative Percentages	Cumulative Frequencies	Cumulative Percentages
Less than 6/60 or blind	6	0.1	3	0.04
6/60 and less	11	0.2	8	0.1
6/36 and less	28	0.4	18	0.2
6/24 and less	55	0.7	45	0.6
6/18 and less	105	1.4	94	1.3
6/12 and less	248	3.3	250	3.4
6/9 and less	1018	13.7	979	13.3
6/6 and less	7434	100	7368	100

Table 20 shows that 17 per cent of all the children tested had sub-optimal visual acuity in the right eye, taking 6/6 as perfect vision. A

similar proportion had suboptimal vision in the left eye but the degree of overlap is not yet known.

However Table 20 does not distinguish between those children who already had glasses prescribed and those who had never worn glasses. The test results of the children who had never worn glasses are therefore shown in Table 21.

Table 21 shows that over 13 per cent of children who did not wear glasses had at least one eye with visual acuity below the optimum, taking 6/6 as perfect vision.

If 6/9 vision is considered acceptable, only 3 per cent of these children are shown to have imperfect vision in at least one eye, but some authorities would not be prepared to accept 6/9 vision as normal in a child until an examination by an ophthalmologist or ophthalmic optician had shown that an eye defect had been excluded.

**Table 22.** Corrected vision of children wearing glasses

	Right eye		Left eye	
	Cumulative Frequencies	Cumulative Percentages	Cumulative Frequencies	Cumulative Percentages
Less than 6/60 or blind	4	1.1	0	0
6/60 and less	5	1.4	0	0
6/36 and less	10	2.8	12	3.3
6/24 and less	19	5.3	23	6.3
6/18 and less	39	10.8	55	15.1
6/12 and less	91	25.2	95	26.1
6/9 and less	182	50.4	193	53.0
6/6 and less	361	100	364	100

In those children tested wearing their glasses, the testing of the right eye showed suboptimal vision in just over 50 per cent, and results for the left eye were similar. It may be that some children were tested wearing glasses which were intended for close work or reading, but the figures suggest that it would be a wise precaution for teachers to consider any child wearing glasses in a primary school to have defective vision and to place that child near the front of the class.

### (c) *Squint*

A history of squint or of suspected squint obtained from the mother was recorded in the Parental Questionnaire. A *manifest* squint observed by the examining doctor was recorded and two tests were specified to

enable him to detect the presence of a *latent* squint, i.e. a tendency to squint which is, in normal circumstances, kept under control. The type of squint (divergent or convergent) and the eye affected were also recorded for later analysis.

The teacher and school medical officer are favourably placed to pick out a child with this condition at school, but squint may derive from a number of causes dating from before birth to any time thereafter. Early detection of squint and other visual defects in the pre-school child is dependent upon the powers of observation of the mother and the use she might make of her general practitioner and the child welfare facilities. Neglect of a severe squint, or other visual defect, may result in the sight of an affected eye becoming permanently impaired.

The results of the history and examination are shown in Table 23 in summary. The detailed tables are in Appendix 1.

**Table 23.** Squint

Number of boys = 4058; Number of Girls = 3927; Total = 7985

	Incidence per cent			Sex difference	
	Boys	Girls	TOTAL	Chi-squared (1 d.f.)	P Value
History of squint or suspected squint	6.4	6.1	6.3	0.3	> 0.05 not sig.
Squint found on examination	3.2	3.0	3.1	0.3	> 0.05 not sig.
Latent squint on examination	2.4	3.4	2.9	6.8	0.01 > $p$ > 0.001

It will be seen from Table 23 that approximately 6 per cent of the children had either a latent or manifest squint on examination. The significantly greater percentage of latent squints in girls is an unexpected finding. There was no difference between the sexes for manifest squint or for a history of squint or suspected squint.

(d) *Visual assessment*

On completing the examination of the eyes and after the eye test, the medical officers were asked to rate the educational implications of any visual defect. This was done on a five point scale (see Medical Questionnaire: Appendix 2) but in Table 24 all children who received any one of

the lowest three ratings are aggregated. The numbers with these ratings were very small and it was felt unwise to consider them as separate groups until time permits individual scrutiny of the questionnaires.

This crude breakdown was also considered advisable because many of the medical examinations were undertaken in clinics and the medical officers may have had no opportunity to discuss detailed educational difficulties arising out of any visual defect with school staffs.

**Table 24.** Visual assessment

	Boys	Girls	TOTAL	Total incidence per cent
Normal vision	3453	3325	6778	86.2
Visual defect, but judged to be no handicap to normal schooling and everyday activities	541	522	1063	13.5
Visual defect judged to be a handicap in school in some degree (including blindness)	10	8	18	0.3
Total assessed	4004	3855	7859	100
Don't know	38	47	85	
No data	11	15	26	
GRAND TOTAL	4053	3917	7970	

Sex difference - Chi-squared (Normal vision: Any visual defect) = 0.0 (1 d.f.) not significant

It will be seen that there is no significant sex difference.

This assessment serves to identify the 14 per cent of children judged to have some visual handicap. Thus, it is an assessment of function and it cannot fully take into account all the degrees of visual acuity shown in Tables 20, 21, and 22.

#### 4. HEARING

##### (a) *Introduction*

The testing and assessment of the children's hearing included a pure-tone audiogram; a functional assessment of hearing by the examining doctor; a clinical hearing test; and any reported history of hearing difficulty or attendance at an audiology clinic. Time has not yet permitted any analysis of the audiograms.

enable him to detect the presence of a *latent* squint, i.e. a tendency to squint which is, in normal circumstances, kept under control. The type of squint (divergent or convergent) and the eye affected were also recorded for later analysis.

The teacher and school medical officer are favourably placed to pick out a child with this condition at school, but squint may derive from a number of causes dating from before birth to any time thereafter. Early detection of squint and other visual defects in the pre-school child is dependent upon the powers of observation of the mother and the use she might make of her general practitioner and the child welfare facilities. Neglect of a severe squint, or other visual defect, may result in the sight of an affected eye becoming permanently impaired.

The results of the history and examination are shown in Table 23 in summary. The detailed tables are in Appendix 1.

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Squint found on examination	3.2	3.0	3.1	0.3	> 0.05 not sig.
Latent squint on examination	2.4	3.4	2.9	6.8	0.01 > <i>p</i> > 0.001

It will be seen from Table 23 that approximately 6 per cent of the children had either a latent or manifest squint on examination. The significantly greater percentage of latent squints in girls is an unexpected finding. There was no difference between the sexes for manifest squint or for a history of squint or suspected squint.

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On completing the examination of the eyes and after the eye test, the medical officers were asked to rate the educational implications of any visual defect. This was done on a five point scale (see Medical Questionnaire: Appendix 2) but in Table 24 all children who received any one of

the lowest three ratings are aggregated. The numbers with these ratings were very small and it was felt unwise to consider them as separate groups until time permits individual scrutiny of the questionnaires.

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Visual defect judged to be a handicap in school in some degree (including blindness)	10	8	18	0.3
Total assessed	4004	3855	7859	100
Don't know	38	47	85	
No data	11	15	26	
GRAND TOTAL	4053	3917	7970	

Sex difference - Chi-squared (Normal vision: Any visual defect) = 0.0 (1 d.f.) not significant

It will be seen that there is no significant sex difference.

This assessment serves to identify the 14 per cent of children judged to have some visual handicap. Thus, it is an assessment of function and it cannot fully take into account all the degrees of visual acuity shown in Tables 20, 21, and 22.

#### 4. HEARING

##### (a) *Introduction*

The testing and assessment of the children's hearing included a pure-tone audiogram; a functional assessment of hearing by the examining doctor; a clinical hearing test; and any reported history of hearing difficulty or attendance at an audiology clinic. Time has not yet permitted any analysis of the audiograms.

(b) *Assessment of hearing*

A functional assessment of hearing was carried out by the school doctor after he had completed the examination and hearing test. The assessment was made on a four-point scale and the definitions at each point on the scale were framed to correspond approximately to the statutory definitions of deaf and partially hearing children.

In view of the small number of children who were assessed as having some degree of auditory handicap and the impossibility of scrutinising the questionnaires individually to confirm the appropriate category, it was decided to group together all such children. The purpose was to compare them with those judged to have 'normal hearing'. The results are shown in Table 25 in which children with 'some degree of hearing impairment' include those with hearing loss which had been corrected by a hearing aid; those whose understanding of speech was impaired (even with a hearing aid); and those whose hearing disability was so severe that they could not understand speech at all. The proportion of children in the present sub-sample who fell into the latter two categories was 0.1 per cent.

**Table 25.** Assessment of hearing

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Normal hearing	3810	95.1	3684	95.2	7494	95.1
Some degree of hearing impairment	199	4.9	185	4.8	384	4.9
Total assessed	4009	100	3869	100	7878	100
Don't know	33		34		67	
No data	11		14		25	
GRAND TOTAL	4053		3917		7970	

Chi-squared = 0.1 (1 d.f.);  $p > 0.05$  not significant

The difference between the sexes on this assessment is not significant. A little under 5 per cent of the children in this sub-sample were judged by the medical officers to have some degree of hearing impairment.

(c) *Hearing test*

The hearing test consisted of twelve test words which the child was required to repeat one by one after the examiner. The test conditions were specified in detail in the questionnaire (see Appendix 2). The

twelve words were selected to test the auditory acuity over the speech frequency range (Sheridan, 1958 and 1965).

A preliminary analysis of the results is presented in the following table.

**Table 26.** Hearing test

Number of Boys = 4053; Number of Girls = 3917; Total = 7970

Test words Score of errors	Right ear		Left ear	
	Cumulative Percentages		Cumulative Percentages	
	Boys	Girls	Boys	Girls
9 or more	0.6	1.0	0.8	0.9
8 or more	0.8	1.1	0.9	1.1
7 or more	1.0	1.1	1.1	1.3
6 or more	1.3	1.3	1.3	1.6
5 or more	1.7	1.6	1.8	2.1
4 or more	2.4	2.6	2.8	3.0
3 or more	3.9	3.9	5.1	4.6
2 or more	10.7	9.7	11.2	9.9
1 or more	28.9	25.4	28.4	26.3
0 or more	100	100	100	100
Percentage with no errors	71.1	74.6	71.6	73.7

Sex differences: Chi-squared (Trend): left ear = 0.8;  $p > 0.05$  not significant  
 Chi-squared (Trend): right ear = 1.9;  $p > 0.05$  not significant

There were no significant sex differences on the results of this hearing test for each ear separately. Detailed results are contained in Tables A50 and A51 of Appendix 1.

It will be seen that some 4 to 5 per cent of the children, for each ear separately, failed to repeat three or more words of the twelve used. A functional assessment by the examining doctor (Table 25) indicated also that 5 per cent of the children had some degree of hearing impairment. Some further analysis will be necessary to determine any correlation between test and assessment and their relationship to audiometry results.

In the hearing test a poor understanding of the meaning of words or an inability to concentrate may adversely affect the score of a child with a minor degree of hearing loss. Conversely, a bright child will be at an advantage in coping with a loss of auditory acuity. The audiogram and the clinical hearing test are therefore complementary in the assessment of hearing.

The test was developed from one which was originally designed for individual specialist use. Its application to the children in this study may, after further analysis, establish its value as an additional screening test for use in conjunction with existing pure-tone audiometric screening methods.

(d) *History of hearing difficulty and clinic attendance*

**Table 27.** History of hearing difficulty and clinic attendance

Number of Boys = 4059; Number of Girls = 3926; Total = 7985

	Incidence per cent			Sex difference	
	Boys	Girls	TOTAL	Chi-squared (1 d.f.)	P Value
Hearing difficulty suspected or confirmed	10.9	9.5	10.3	4.3	$0.05 > p > 0.01$ not sig.
Attendance at a hearing or audiology clinic	8.1	7.8	7.9	0.2	$> 0.05$ not sig.

The results of the analysis showed no significant sex differences. Detailed numbers are contained in Tables A49 and A33 of Appendix 1.

Some 10 per cent of the children in this sub-sample were reported by their mothers to have had a suspected or confirmed hearing difficulty at any time in the first seven years of life. Numbered amongst these will be children who had a temporary catarrhal deafness following a cold; those whose lack of attention or responsiveness had led to a suspicion of hearing difficulty; and those whose hearing might have been shown with certainty to be impaired.

Approximately 8 per cent of the children were reported to have attended hearing or audiology clinics. These children would include a considerable number who had been sent for routine audiometry as a result of doubtful screening tests of hearing at school. On re-testing, the majority of the children are found to be normal. The figure of 8 per cent does, however, give some indication of the amount of work undertaken by audiology clinics.

## 5. LATERALITY

### (a) *Introduction*

The school child who is left-handed differs from the majority of his fellows. In the past, attempts were made by parents and teachers to correct left-handed tendencies in what was then thought to be in the best

interests of the child. The modern attitude is more permissive. The large number of theories on handedness merely reflect the uncertainty about its origins and its implications. Hereafter in this section, the term 'handedness' is confined to the mother's opinion on the child, and 'laterality' is used to describe the results of the tests.

Results on handedness and tests of laterality will be analysed in the study for three main purposes:

- (i) to determine the pattern of right or left dominance and mixed laterality in this cohort;
- (ii) to investigate whether any of these tendencies are associated with educational, emotional or other handicap;
- (iii) to establish any relationship with events occurring in pregnancy or the perinatal period.

Preliminary results are presented here on the first of these items.

#### (b) HANDEDNESS - MOTHERS' INFORMATION

The mothers were asked whether their child was right-handed, left-handed or mixed right-handed and left-handed. The results are shown in Table 28.

**Table 28.** Handedness (mothers' information)

Number of Boys = 4058; Number of Girls = 3927; Total = 7985

	Right-handed	Left-handed	Mixed-handedness	TOTAL	Don't know	No data
Boys						
Number	3227	455	351	4033	5	20
Per cent	80.0	11.3	8.7	100		
Girls						
Number	3337	344	230	3911	6	10
Per cent	85.3	8.8	5.9	100		
TOTAL						
Number	6564	799	581	7944	11	30
Per cent	82.7	10.1	7.3	100		

#### *Sex differences:*

Chi-squared (Left-handed: Right-handed and Mixed-handed) = 13.6 (1 d.f.);  $p < 0.001$

Chi-squared (Mixed-handed: Right and Left-handed) = 23.3 (1 d.f.);  $p < 0.001$

The evidence from the analysis is that, as reported by mothers, more boys than girls are left-handed and also more boys are mixed-handed.

(c) *Tests of laterality*

The pattern of limb-dominance or eye-dominance is not necessarily invariable for any one person but may depend upon the activity or task

**Table 29.** Laterality tests

Number of Boys = 4053; Number of Girls = 3917; Total = 7970

	Right	Left	Mixed laterality	TOTAL	Don't know	No data
<b>HAND</b>						
Boys						
Number	3202	353	485	4040	9	4
Per cent	79.3	8.7	12.0	100		
Girls						
Number	3143	237	527	3907	8	2
Per cent	80.0	6.1	13.5	100		
TOTAL						
Number	6345	590	1012	7947	17	6
Per cent	79.8	7.4	12.7	100		
<b>FOOT</b>						
Boys						
Number	2235	329	1464	4028	12	13
Per cent	55.5	8.2	36.3	100		
Girls						
Number	2330	234	1333	3897	13	7
Per cent	59.8	6.0	34.2	100		
TOTAL						
Number	4565	563	2797	7925	25	20
Per cent	57.6	7.1	35.3	100		
<b>EYE</b>						
Boys						
Number	2303	1418	314	4035	13	5
Per cent	57.1	35.1	7.8	100		
Girls						
Number	2343	1259	301	3903	12	2
Per cent	60.0	32.3	7.7	100		
TOTAL						
Number	4646	2677	615	7938	25	6
Per cent	58.5	33.7	7.7	100		

*Sex differences:**Hand*

Chi-squared Right: Left (excluding 'Mixed laterals') = 18.9 (1 d.f.)  $p < 0.001$

*Foot*

Chi-squared Right: Left (excluding 'Mixed laterals') = 18.0 (1 d.f.)  $p < 0.001$

*Eye*

Chi-squared Right: Left (excluding 'Mixed laterals') = 7.9 (1 d.f.)  $0.01 > p > 0.001$

which is undertaken. Thus, 'mixed-handedness' reported by the mother (Table 28) will in most cases refer to the child's ability or preference to use different hands for different purposes.

During the medical examination, tests were used to determine the hand, foot and eye which was used by each child in specific tasks. The examiner was asked to record for the two tasks involving the use of the hand and arm whether only the right hand was used; only the left hand; or, both right and left hands. Similarly, a record was made of the preferred foot and eye (see Appendix 2, page 241).

In Table 29 the results of these tests are presented separately for hand, foot and eye. On the basis of their performance in the tests the children were allocated to one of three groups: 'Right', (when only the right hand, foot or eye was used); 'Left', or 'Mixed' laterality. The categories to which the children have been allocated should be seen in terms of the type and number of tasks set. For example, had more tests been used, the number of 'mixed-laterals' may have been somewhat higher. In testing for sex differences, therefore, 'mixed-laterals' were excluded.

The results show that more boys than girls show a preference for using the left hand, left foot or left eye in terms of the tasks specified. The percentage figures relate only to these particular tests and in any case should be regarded as provisional at the present stage. Approximately one third of the children showed no clear foot preference and 58 per cent were right footed. One third showed left eye dominance. Although the incidence of left-hand laterality shown by testing was not as high as left-handedness reported by mothers, it remains higher than that shown by many other workers.

## 6. DENTAL EXAMINATION

### (a) *Introduction*

The medical examination of the 1958 cohort provided the opportunity to assess the state of children's teeth at the stage of transition from infant school to junior school on a national scale, though it was realised that such an inspection carried out by doctors could not achieve the same degree of accuracy as that undertaken by dental officers.

The index of dental caries used – the total number of decayed, missing and filled teeth – provides a basis for comparison with existing figures and allows possible associations with other factors to be sought at a future date.

A record of the number of decayed, missing or filled teeth has the added advantage that it allows some assessment of the amount of dental decay more or less independent of the dental treatment. However, this

index does not make separate allowance for naturally shed teeth which at the age of 7 years is a relevant factor.

For the purpose of comparison, figures for Nottinghamshire in 1963 (H.M.S.O., 1964) are reproduced in Table 30, since they show the sexes separately.

**Table 30.** Dental decay (Nottinghamshire, 1963)

N = 1435

	Percentage of children showing no D.M.F.* teeth		Average number of D.M.F.* teeth per child examined	
	Boys	Girls	Boys	Girls
5 year age group	28.0	22.8	4.1	4.0
12 year age group	6.8	5.4	4.0	4.1

\*Decayed, missing and filled

(b) *Dental decay*

The results of the dental examination of the present sub-sample are shown in Table 31 for those children for whom this information is available. The detailed figures are contained in Table A41 of Appendix 1.

**Table 31.** Dental decay

N = 7928

	Percentage of children showing no D.M.F. teeth		Average number of D.M.F. teeth per child examined	
	Boys	Girls	Boys	Girls
7 year age group	12.7	12.3	4.7	4.6

It will be seen that the percentage of children with no decayed, missing or filled teeth in the present sub-sample lies between the figures quoted for 5-year-olds and 12-year-olds in Nottinghamshire (Table 30). Inspection of Table 31 suggests no sex difference and there is further evidence of this when analysis is carried out on the full distribution of D.M.F. teeth in the sample (Table 32). These results are shown in graph form in Figure 5.

The provisional figures shown in Appendix 1: Table A33 show that some three-quarters of the sub-sample were reported to have attended, at some time in the past, a dental clinic, dental surgeon or orthodontist. A more significant point, perhaps, might be that nearly a quarter of the

children were reported as not having made use of these facilities in spite of the availability of a school dental service and a free personal dental service. Both these services are already over-worked, and if the needs indicated by the present findings are to be met, clearly a reappraisal of dental establishment is required.

**Table 32.** Dental decay

Number of Boys = 4029; Number of Girls = 3899; Total = 7928

Number of decayed, missing and filled teeth	13 +	12 +	11 +	10 +	9 +	8 +	7 +	6 +	5 +	4 +	3 +	2 +	1 +	0 +
Cumulative Percentages:														
Boys	2.8	4.4	6.4	9.9	14	21	29	38	48	60	69	79	87	100
Girls	1.8	3.3	5.2	8.2	13	20	27	37	47	59	69	80	88	100

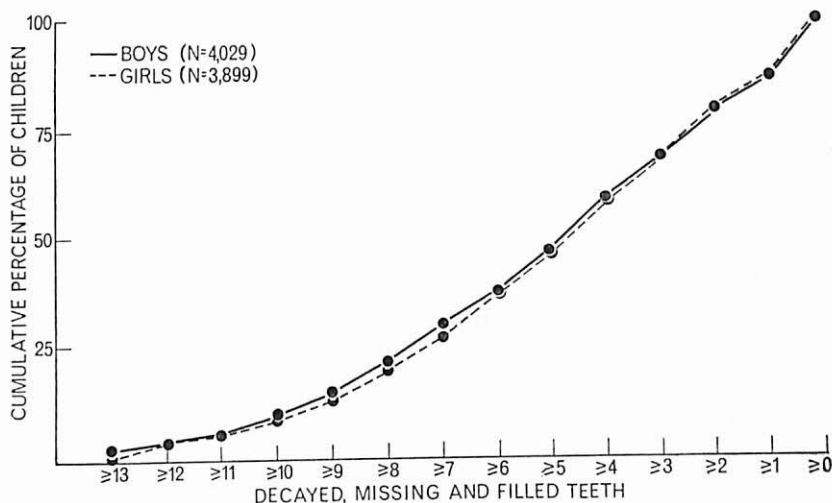
*Sex differences:*

Chi-squared (Trend) = 0.06;  $p > 0.05$  not significant

Chi-squared (Departure) = 18.0 (11 d.f.);  $p > 0.05$  not significant

**Figure 5.** Dental decay

N = 7928



## 7. MICTURITION AND BOWEL CONTROL

### (a) Introduction

In obtaining information about micturition and bowel control, as for other developmental milestones, retrospective enquiry from each mother as to the age at which these milestones were reached would have very

limited value. Instead, an age was chosen at which it was known that the great majority of children would have achieved bladder or bowel control and the mothers were asked whether their child had achieved control by this time. Though answers obtained would still not be without a measure of unreliability the major aim was not to establish norms for these facets of development. It was rather to identify those children who had reached these milestones later than the majority of their peers so that these facets could be related to other aspects of health and development; and also so that a comparison could be made between the sexes in these respects.

(b) *Micturition and bowel control by day*

Two questions were put to mothers about micturition and bowel control by day. The results are summarised in Table 33 and the detailed figures are shown in Appendix 1: Tables A37 and A38.

**Table 33.** Micturition and bowel control by day

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Incidence per cent			Sex difference	
	Boys	Girls	TOTAL	Chi-squared (1 d.f.)	P Value
Wet by day after 3 years	4.4	4.3	4.4	0.1	> 0.05 not sig.
Soiled by day after 4 years	1.8	0.6	1.2	22.1	< 0.001

The percentage of boys and girls who were reported to have wet themselves in the daytime over the age of 3 years is similar; approximately 4.4 per cent.

The response to the second question suggested that 1.8 per cent of boys and 0.6 per cent of girls had not achieved bowel control by the age of four. The sex difference is highly significant.

In replying to the above questions, the mother was told to ignore the occasional mishap. However, the problems of wetting and soiling are clearly not likely to be great, even in nursery schools or classes.

(c) *Bedwetting*

The response in Table 34 suggests that bedwetting over the age of 5 years, even when occasional mishaps have been excluded, must be considered quite a common phenomenon, affecting some 11 per cent of children in this sample. As this question related to events occurring

within 2 years of the Study, it is less likely to evoke unreliable replies than those concerning the earlier milestones.

More boys were reported to be wet at night after 5 years of age than were girls (12.1 per cent boys, and 9.7 per cent girls). The difference between the sexes is highly significant.

**Table 34.** Bedwetting

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Incidence per cent			Sex difference	
	Boys	Girls	TOTAL	Chi-squared (1 d.f.)	P Value
Wet by night after 5 years	12.1	9.7	10.9	11.4	< 0.001

The detailed figures from which this table is summarised are contained in Appendix 1: Table A36.

The figure of 11 per cent is high enough to merit further investigation. It may be that the age at which bladder control is normally attained extends over a greater range than is generally accepted.

#### 8. CIRCUMCISION

The medical examiners were asked to record at the time of the medical examination whether or not the boys had been circumcised. The results are presented below in Table 35.

**Table 35.** Circumcision

N = 4053

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
No. of boys	390	3608	3998	9.7	38	17

That less than 10 per cent of the boys were noted to be circumcised may reflect changing attitudes towards this procedure over recent years.

#### References

DEPARTMENT OF EDUCATION AND SCIENCE *The Health of the School Child 1962 and 1963* (H.M.S.O.) (1964).

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SHERIDAN, M. D. *The Child's Acquisition of Speech*, *B.M.J.*, **i**, p. 707 (1945).

SHERIDAN, M. D. *Simple Clinical Hearing-Tests for Very Young or Mentally Retarded Children*, *B.M.J.*, **ii**, pp. 999-1004, (1958).

SHERIDAN, M. D. *Personal Communication*. Paediatric Research Unit, Guy's Hospital, London (1965).

## D. Uristix urine test for proteinuria and glycosuria

### (1) INTRODUCTION

This test provides a simple means of testing for the two commonest abnormal constituents in urine – protein and glucose – by dipping a test strip in the urine and noting any change in colour of the strip.

Bottles of test strips were distributed to every local health authority in sufficient quantities to test the urine of all children in the survey.

### (2) PROTEIN IN THE URINE

**Table 36.** Test for protein in urine

Number of boys = 4053; Number of girls = 3917; Total = 7970

	Numbers				Incidence per cent		Don't know or not tested	No data
	Positive	Trace	Negative	TOTAL	Positive	Trace		
Boys	63	273	3620	3956	1.6	7.0	89	8
Girls	66	364	3345	3775	1.7	9.8	130	12
TOTAL	129	637	6965	7731	1.7	8.2	219	20

Sex differences: Chi-squared (Positive:Negative and Trace) = 0.3 (1 d.f.);  $p > 0.05$  not significant

Chi-squared (Trace:Negative) = 19.4 (1 d.f.);  $p < 0.001$

Some 10 per cent of the children are shown by this test to have at least a trace of protein in the urine; 1.7 per cent were definitely positive.

Although there is the possibility that some specimens of urine were contaminated during or after collection, the presence of even a trace of protein in the urine would normally require a child to be re-examined in order to exclude the possibility of disease.

There is no statistically significant difference between the sexes when the positive tests are considered, but when the sex difference is for those showing a trace of protein, the result is highly significant, the higher incidence occurring amongst girls.

There has recently been correspondence in the medical press on the possibility of both false negative and false positive results from this type of test for protein in the urine (*British Medical Journal*, 1965 and 1966).

### (3) TEST FOR GLUCOSE IN THE URINE

**Table 37.** Test for glucose in the urine

Number of boys = 4053; Number of girls = 3917; Total = 7970

	Positive	Negative	TOTAL	Don't know or not tested	No data
Boys	5	3944	3949	94	10
Girls	3	3768	3771	134	12
TOTAL	8	7712	7720	228	22

Sex difference: Chi-squared = 0.4 (1 d.f.);  $p > 0.05$  not significant

This test is specific for glucose and is not affected by other reducing substances.

Only 8 children were reported to have glucose in the urine, an incidence of about 0.1 per cent.

### References

- EMRYS-ROBERTS, M., Letter on 'Albustix Test for Urine Protein', *B.M.J.*, 1965, **ii**, pp. 1369-70 (1965).  
DAGNALL, P., Letter on 'Albustix Test for Urine Protein', *B.M.J.*, 1966, **i**, p. 677 (1966).

## E. Medical and developmental sex comparisons

### 1. INTRODUCTION

In this section comparisons are made between boys and girls for incidence of some past illnesses, accidents, hospital admissions, attendance at specialist clinics; and for some data from the medical examination of the children at 7 years of age.

The totals from which these comparisons are made should not be seen as more than estimates of incidence of illnesses or other factors in

the whole cohort for a number of reasons. First, the cohort was not studied between birth and the present time; the historical data are thus retrospective. Secondly, it was gathered from parents and not from hospital or other records, although it is intended to obtain corroborative data from hospitals or clinics.

The possibility exists of differential parental recall on some items favouring one or other sex, but this is not likely to be an important source of bias. In this section the results of sex comparisons are summarised from tables which are contained either in Appendix 1 (in which case they are identified in the text prefixed by the letter 'A') or occasionally in Section VC. Where comment is made on a sex difference in the text this is significant at a level of at least 1 per cent unless otherwise specified.

Mortality rates are known to be higher in boys than in girls; a greater male perinatal death rate was also found for the present cohort in the Perinatal Mortality Survey. It is therefore reasonable to expect that there should be greater childhood morbidity in males than in females, and these hypotheses can be tested for many illnesses and childhood conditions.

## 2. ACCIDENTS

The results on this sub-sample of children confirm the view that, in general, boys are more accident-prone than girls. Thus, a higher proportion of boys had had one or more hospital admissions for road accidents, and for all other accidents or injuries which had not occurred within the home (Table A34). More boys, too, were reported as having had in the past a head injury with loss of consciousness (Table A21). For home accidents, however, there was no significant difference between the sexes (Table A.34).

From these provisional figures it would appear that about 3 per cent of the boys had been admitted to hospital on one or more occasions for a road accident; as many as about 10 per cent had had an accident in the home severe enough to require hospital admission; and a similar proportion were reported to have been admitted to hospital for other accidents or injuries sustained outside the home. The corresponding figures for girls, although slightly less, were still disconcertingly high, emphasising the need for increased concentration upon accident prevention in childhood.

## 3. UPPER RESPIRATORY INFECTIONS

Past upper respiratory infections showed no sex difference, as judged by a history of three or more ear infections during the year preceding the

medical examination or by a history of admission to hospital for tonsils and/or adenoids (Tables A16 and A34). On the other hand, current upper respiratory conditions did show a male preponderance in that the medical examinations revealed a higher proportion of boys with nasal obstruction, and some evidence of more nasal or postnasal discharge ( $0.05 > p > 0.01$ ) and enlarged glands in the neck; the mothers also reported that boys were more often habitual snorers and mouth breathers (Table A16).

#### 4. PSYCHOSOMATIC AND BEHAVIOUR PROBLEMS

A history of travel sickness was reported more frequently in girls than boys. There was also some evidence ( $0.05 > p > 0.01$ ) of more frequent periodic abdominal pain in girls (Table A20).

Boys more frequently showed a history of tics or habit spasms; breath holding, head banging or 'rocking'; and were more frequently reported to have attended child guidance clinics (Tables A21 and A33).

No sex difference emerged in the history of frequent headaches or migraine, or in that of periodic vomiting or bilious attacks (Tables A21 and A19).

#### 5. CONVULSIONS

There was some evidence ( $0.05 > p > 0.01$ ) that boys had had more fits in the first year of life (Table A22), but there was not an excess of males with fits after one year (Table A23) or with petit mal (Table A24).

#### 6. ALLERGIC STATES

The objectivity of a history of asthma or eczema given by the mother is difficult to assess without confirmation. More boys were reported to have had asthma or bronchitis with wheezing (Table A16). There was no sex difference in history of eczema after 1 year of age or of eczema on examination (Tables A28 and A29), or of a history of hay fever (Table A16).

#### 7. SPEECH

A history of stammer and of other speech difficulty was reported more often in boys; on examination, more boys were assessed as being not fully intelligible during speech testing and there was also some evidence ( $0.05 > p > 0.01$ ) of a higher incidence of observed stammer (See V C, Table 18). Fewer boys were reported to have been 'talking' (i.e. joining two words) by the age of two years (Table A35). It is not therefore surprising that more boys of 7 years had already attended for speech therapy (Table A33).

## 8. OPHTHALMOLOGICAL CONDITIONS

There were no significant sex differences in a history of squint or suspected squint, nor of manifest squint on examination (Section V C, Table 23); further, no sex difference was found in those assessed by the medical officer to have a visual defect (Table 24). However, more girls than boys were found to have latent squint on examination (Table 23).

## 9. AUDITORY CONDITIONS

A comparison of the sexes revealed no difference in the results of a clinical hearing test, in an assessment of hearing impairment by the medical examiners or in the proportion of boys and girls who had attended hearing or audiology clinics (Section V C, Tables 25, 26, 27). On examination there was no difference between boys and girls in the frequency with which signs of past or present otitis media were present.

A higher proportion of girls were reported by their mothers as having had earache in the first 7 years of life. (A16).

## 10. DENTAL STATUS

At 7 years of age, as judged by the number of decayed, missing or filled teeth, there was no sex difference (Section V C, Table 32) and no sex differential in past utilisation of dental services (Table A33). A minor finding was that a history of recurrent mouth ulcers was more frequent in girls (Table A17).

## 11. CONGENITAL MALFORMATIONS

Sex differences were tested on a few congenital anomalies in this sub-sample. A history of 'port-wine stains' of the skin was commoner in girls and there was some evidence of a similar sex difference ( $0.05 > p > 0.01$ ) in the history of 'strawberry naevi'. On examination 'birth marks' were reported more frequently in girls (Tables A25, A26 and A27). There was also a preponderance of girls with a history of congenital dislocation of the hip – although actual numbers were small – and some evidence ( $0.05 > p > 0.01$ ) of a similar difference in the history of talipes (Tables A32 and A31). More boys were reported to show deformities of chest and external ear (Table A16).

## 12. HERNIA

More boys than girls had a reported history of this condition and more had been admitted to hospital for hernia repair. This difference between the sexes was apparent, too, at the medical examinations

where more boys were reported by the medical officers to have inguinal hernia but no other hernia (Table A18).

### 13. HOSPITAL ADMISSIONS

The results of the enquiry about all hospital admissions are summarised in Table A34. Reference has already been made to most of the sex differences in the comments upon individual conditions.

Inspection of the table suggests that more boys than girls had been admitted to hospital. However, this has not been tested yet; it must be remembered that the same child may appear under more than one heading if admitted for more than one condition.

## F. Environmental factors

### 1. INTRODUCTION

A comprehensive study of children's growth and development must include a study of home background. There is mounting evidence from investigations into the complex processes involved in a child's response to school (for example, Fraser, 1959; Floud, Halsey and Martin, 1957; Douglas, 1964; Wiseman, 1964) to indicate the vital importance of social factors in educational achievement and progress.

In this section, some of the data which were collected about the home background of the children in the present sample are presented and discussed. Most of the information was obtained in interviews with mothers, but questions relating to school attendance and parents' interest in the child's education were answered by head teachers.

Only a fraction of the relevant information could be included in this section. A choice had to be made among the original factors selected for study and it does not necessarily follow that because a topic is included here there are not others which may prove to be of equal, or possibly greater, importance that have been omitted. Within the limits of availability, items were chosen according to two criteria: first, their assumed importance and relevance to children's development; and, secondly, the likelihood of their being of special interest to the Central Advisory Council.

The material presented in this section is essentially of a descriptive nature. Time has not permitted many comparisons with other studies but not infrequently other data were not available, or were not strictly comparable. Within the sample sex differences have been considered where relevant.

The numbers of children included in the different tables will vary as follows:

- 10,833: All children in 'ordinary' maintained and independent schools for whom data from the Educational Assessment booklet were available for sorting on punched cards. (See Introduction to Section VA: 'Educational Factors'.)
- 7,985: All children with data from completed Parental Questionnaires available for sorting on punched cards, irrespective of their schooling.

In addition, some of the figures were abstracted from computer tables and totals will vary according to the number of cases where particular information was available. It should be noted that all totals from computer tables in this section include children known to be either in 'ordinary' or 'special' schools. Those children whose type of school was not known, and the very few resident in hospital, are not included.

Much of the information contained in this section was derived from Parental Questionnaires; that is, for a sub-sample of 7,985 children. The question of the representative nature of this sub-sample has been discussed elsewhere (Section II: 'Description of the Sample'), and may be summarised as follows: first, there were no very marked differences between the social class distribution of the sub-sample and that of a national sample; such differences, as there were, are difficult to interpret. Secondly, a comparison of the social class distribution of the sub-sample with that of 'late returns' showed an overall significant difference, but did not indicate a consistent change in the social class distribution. Thirdly, the reading ability and social-adjustment at school of the sub-sample was compared with that of the children for whom a Parental Questionnaire had not been received. Here, there was statistically significant evidence that the children in the sub-sample were better readers and better adjusted than the children whose Parental Questionnaires had not been received.

The implications of this statistically significant but not marked bias in the sub-sample are that when information is derived from the Parental Questionnaires, any findings relating to adverse conditions are likely to under-estimate the incidence of such circumstances in the total cohort.

## 2. SOCIO-ECONOMIC STATUS

Information was available about the occupations of the children's fathers or the male heads of households, both from the Perinatal Survey and from the present Study. This allowed the possibility of a choice between using current or past information for classification into socio-economic groups.

The value of using current information about the father's occupation lay in the nature of the material to be presented in the report. Where perinatal data were to be linked with current data about the children, the arguments for and against using present or past information seemed fairly evenly balanced. But for much of the report the educational, medical and social information presented and discussed was concerned directly with the children's development at the age of 7. For this, the use of father's present occupation was considered most relevant.

It was finally decided, therefore, to use the father's present occupation in all analyses in this report which use the socio-economic status of the family as a variable.

**Table 38.** Social Class distribution

(Children for whom Parental Questionnaires had been returned by August, 1965)

Social Class categories	Present sample	
	N	Per cent
I Professional etc. occupations	443	5.7
II Intermediate occupations	1131	14.6
III Skilled occupations	4387	56.8
IV Partly skilled occupations	1322	17.1
V Unskilled occupations	440	5.7
Total information	7723	100
No male head of household	202	
No data	60	
GRAND TOTAL	7985	

Information about the occupation of each child's father, or the male head of household, was obtained from 7,723 of the 7,985 Parental Questionnaires which were completed and returned in time for analysis. Of the remaining 262 questionnaires, information about the father's occupation was incomplete or not available in 60 cases, and in 202 cases the children were living in households without a father or male head.

Each occupation was grouped initially in the five Social Class categories of the General Register Office's 'Classification of Occupations 1960'. The proportions in each Social Class for the present sub-sample are shown in Table 38.

A comparison has been made (see Section II B 'Description of the Sample') between the above distribution and that of a 10 per cent

sample of married women in England and Wales, classified by their husbands' occupations (H.M.S.O., 1966). The differences between the two distributions are not marked and may be due to the following factors: the present sample is of children and not of households; the data were gathered 4 years later; the present sample is only part of the 1958 cohort and does not include the data from Welsh children.

In order further to check on the representative nature of this sub-sample of 'early returns', a comparison was made between the Social Class distribution of this group and that of the 'late returns' (see Section II B 'Description of the Sample').

**Table 39.** Occupational groupings used in this study

N.C.D.S. descriptive category	N.C.D.S. Occupational Groups	Corresponding R.G.'s Social Class groups	No. of children	Per cent
Professional and technical	Occupational Group 1	I and II	1574	20.4
Other non- manual	Occupational Group 2	III Non-manual	830	10.7
Skilled manual	Occupational Group 3	III Skilled manual	3557	46.1
Partly skilled manual	Occupational Group 4	IV Partly skilled	1322	17.1
Unskilled manual	Occupational Group 5	V Unskilled	440	5.7
Total			7723	100
No male head of household			202	
No data			60	
GRAND TOTAL			7985	

Some modification of the General Register Office's five Social Class categories was considered advisable for the purpose of socio-economic classification in this report. Social Class I and II are grouped together as it was considered that the distinctions between the two categories are minimal in this kind of analysis. On the other hand, in relation to many factors in social analysis, including children's development, it has been found that many of the characteristics of workers in clerical and other non-manual occupations are not similar to skilled manual workers, but lie between those of the latter and of professional workers. As the Registrar General's Social Class III includes both these non-manual and the

skilled manual occupations, it was decided to separate the skilled manual workers from the non-manual workers in this Social Class. It was not considered meaningful to separate the small proportion of non-manual from manual workers in Social Class IV. The resulting regrouping and nomenclature are shown in Table 39.

The above five Occupational Groups are the basis of the main socio-economic classifications used in this interim report. Although the father's occupation on its own must be considered a relatively crude index of a family's social, economic and cultural environment, nevertheless there are meaningful distinctions in this kind of grouping which are highly relevant to children's development. Further information from the questionnaires is available on the social and economic circumstances of the children's families, both at the time of birth and at the age of seven. It is intended at a later stage to combine some or all of these data to provide a basis for a more sophisticated socio-economic classification.

The data from the questionnaires containing information about children with no male head of household are included in all tables in the Descriptive Statistics Section, and in other sections of the report where there is no Occupational Group breakdown. When there is an Occupational Group classification, these data had to be excluded and are shown on tables under the 'No data' columns; thus, they do not appear in the percentaged totals.

### 3. FAMILY STRUCTURE

#### (a) *Parental situation*

**Table 40.** Parental situation

	N	Per cent
Living with both natural parents	6808	93.8
Not living with both natural parents	452	6.2
TOTAL INFORMATION	7260	100

The second category in the above table covers all known situations where children are not being cared for by their own mothers and fathers. It includes those living with only one parent because of illegitimacy, desertion, divorce, separation or death; those with one step-parent as well as children who were adopted, fostered or in care. The very small number who live more or less permanently in hospitals, or similar institutions, are excluded.

At the time when the information was obtained, 6 per cent of the present sub-sample was living in a family or group situation which was different in one or more respects from the majority. It is, of course, difficult to assess the influence and weight of abnormal factors in a child's family situation. For example, a child living with his own parents, one of whom may be mentally or physically seriously ill, may well be growing up in an atmosphere of much greater strain than another child who has been successfully adopted or fostered. Nevertheless, a child not living with both his natural parents will in many cases have experienced a period of separation which may have been prolonged; in others, for example, one-parent families, the child may be permanently deprived of a normal home life. Thus at some time or another he will probably have undergone an upsetting, if not seriously traumatic, experience.

There is considerable evidence from research findings (Lewis, 1954; Fraser, 1959; Wynn, 1964; Pringle, 1965; Roe, 1965) to show that in our society the lives of children from incomplete or broken families are adversely affected by a combination of circumstances; these extend not only to emotional but also to social and educational development. Findings relating to the reading ability of this group of children compared with the total sample are discussed in Section VI C of this report.

*(b) Number of children in the household*

The relationship between family size and measures of ability and attainment has been shown in a number of studies. Douglas (1964), for example, found that children of families of four or more in each of the socio-economic groups he examined were at a disadvantage educationally when compared with their peers in smaller families; the differences were most marked for children of manual workers. Of course, there are large families at all economic levels; however, there are proportionately more among unskilled workers, so that being a member of a large family may sometimes be another factor in an interacting set of unfavourable circumstances which have an adverse effect on a child's development.

Family size can be defined in various ways. The number of children in the 'normal' family will usually be the same under any meaningful definition, but for some family situations different definitions will affect the number of children to be included. Thus, different indices may be relevant in considering different aspects of children's development.

Here it was considered that, as an index of the social climate of the child's home life, the total number of children in the household under the age of 21 would be most meaningful. All children under 21 years belonging to one household were included, irrespective of whether or not they were related to the sample child (e.g., foster children, cousins, etc.). Also

included were those living at home only during school holidays or for other short periods. The results presented in Table 41 show the distribution of children by the size of household.

**Table 41.** Number of children in household under the age of 21 years (including sample child)

	N	Per cent
One	665	9.2
Two	2629	36.2
Three	1879	25.9
Four	1068	14.7
Five	498	6.9
Six or more	519	7.1
TOTAL INFORMATION	7258	100

In this sample of 7-year-olds, 9 per cent were only children and 7 per cent came from households of six or more. Since the sample was of children and not of households, the figures cannot, of course, be taken as an estimate of the distribution in the general population of numbers of children in households.

It is hoped at a later stage to compare these figures with other classifications of family size which can be obtained from the data.

#### 4. OVERCROWDING

In accordance with the definition of maximum occupation density used by the 1961 census, the children in the sample were considered to be living in overcrowded homes whenever there were more than one and-a-half persons to a room. By this criterion, a family of three living in two rooms is not considered overcrowded, whereas a family of four people or more in the same accommodation is judged to be so. This official definition employs quite a severe standard (H.M.S.O., 1965), and one that many people – even in average income sections of the community – would not regard as acceptable.

**Table 42.** Proportion of children living in overcrowded conditions

	N	Per cent
Not overcrowded	6391	88.8
Overcrowded	805	11.2
TOTAL INFORMATION	7196	100

Data are available from the questionnaires on other main indices of poor housing conditions such as multiple occupation and lack of basic domestic facilities. However, as this information could not be included at this stage, the present results cover only one aspect of unsatisfactory housing.

It can be seen from Table 42 that 11.2 per cent of this sub-sample were living in overcrowded conditions, as defined above.

It has been suggested that there is an association between various aspects of children's development and housing conditions (Douglas, 1964; Fraser, 1959), with poor housing being adversely related to children's general progress and school performance. This association, however, is an extremely complex one. Other factors must be taken into consideration, even when family difficulties appear at first to be primarily related to unsatisfactory housing.

Conditions of housing vary, of course, in different regions and neighbourhoods, with respect to factors such as age, size and state of repair, as well as sheer availability. Poor accommodation in a slum area may be differently associated with a child's progress than overcrowded accommodation in a better neighbourhood; similarly, much will depend on whether overcrowding is a temporary or permanent situation. The size and composition of the household, as well as the ages of its members, are further important considerations and the personalities of the parents – particularly the mother – can greatly lessen or increase the strain of bad housing. Studies of problems associated with the establishment of new housing estates have shown the relevance of some of those factors, together with the pitfalls of making generalisations based solely or mainly on housing conditions (Taylor and Chave, 1964).

## 5. MOBILITY

### (a) *Moving home*

Data on this question were obtained from mothers of children who had lived with their parents since birth. The moves reported could be of any distance. Table 43 shows how often the family had moved since the child in our sample was born.

About a third of the children have not moved at all in comparison with 64 per cent who have moved once or more. Thirteen per cent have moved twice and 13 per cent of the children have done so three or more times. These totals may well be an underestimate of the amount of moving in the total cohort since the untraced children, who are not, of course, included, are more likely to belong to families who move frequently.

**Table 43.** Number of times family has moved since child's birth

Number of moves	N	Per cent
None	2866	36.4
One	2892	36.7
Two	1064	13.5
Three	512	6.5
Four	262	3.3
Five	102	1.3
Six	82	1.0
More than six	103	1.3
Total information	7883	100
No data	102	
TOTAL	7985	

Not a great deal is known about the effects of frequent moves on the growth and development of young children. Available data will make it possible to analyse at a later stage some of the factors that may be related to what seems to be a not uncommon experience for about a quarter of the present sample.

(b) *Changing school*

The number of schools which the mothers reported the child to have attended since the age of five is shown in Table 44.

**Table 44.** Number of schools attended since the age of 5

	N	Per cent
One	6424	82.1
Two	1209	15.4
Three	165	2.1
Four	20	0.3
Five and over	7	0.1
Total information	7825	100
No data	160	
TOTAL	7985	

By the time the children were at the end of their infant schooling, 15.4 per cent had changed school once and 2.5 per cent two or more times. This presents a somewhat different picture from the previous table and may indicate that more frequent moves of home take place before the

child goes to school, or that the moves are in the same locality, so that no school change is involved.

Reasons for changes of school vary as will the effect of the changes on children's educational progress. School factors as well as those in the child's personality and home background may play an important part. Further analysis of different factors in this group of children's development and home background will be possible at a future stage in relation to the possible influence of changing school and moving house.

## 6. SCHOOL ATTENDANCE

Information was gathered from the schools about the children's attendance from the beginning of the Autumn Term, 1964, to the Summer Term, 1965, the latter being the time when the Educational Questionnaires were completed for the majority of the children. Teachers were also asked to give a rating of children's attendance on the Bristol Social Adjustment-Guide but, at present, only the objective data are presented.

In the present sample 70 per cent of the children were recorded as having an attendance rate of 90 per cent or higher. This is equivalent, approximately, to 18 days' absence, or less, in a school year. About 9 per cent of children had an attendance record of below 80 per cent. Children who had been admitted to a particular school only recently and thus attended for a short period are included; the results for these children will obviously be less reliable. It was noted in checking the completed material that this particular question was not well answered due, perhaps, in some measure to the way in which it was asked. Although it was felt that this was unlikely to have affected the overall results seriously, these should be regarded as tentative in view of this proviso.

**Table 45.** Percentage attendances

Percentage of possible attendance	N	Per cent
95-100	4854	45.7
90-94	2505	23.6
85-89	1517	14.3
80-84	804	7.6
75-79	428	4.0
70-74	202	1.9
Under 70	319	3.0
Total information	10629	100
No data	16	
GRAND TOTAL	10645	

Many circumstances in the children's home background may influence their records of attendance. Health is an important aspect and is, itself, associated with other factors in the home background, such as standards of parental care and parents' interest in their children's education. On the other hand, the influence of the school is also very important. It seems likely that just as poor school attendance may adversely affect children's progress in school, so poor progress and adjustment in school may in some cases lead to poor attendance.

Further, there is some evidence (Douglas and Ross, 1965) that schools differ in the extent to which they succeed in helping children whose educational progress has been adversely affected by absence.

#### 7. PARENTAL INTEREST

There is considerable evidence from research that parents' attitudes to and interest in their children's education are closely associated with school performance (Fraser, 1959; Douglas, 1964; Wiseman, 1964). These attitudes and interest are themselves often associated with a number of other factors of general care, which are related to children's development. For example, a mother realistically concerned with her child's education is also more likely to take advantage of other available services for his welfare. However, in this section the discussion is confined to the interest that parents show in their children's educational progress.

**Table 46.** Teachers' ratings of maternal interest

	Maternal interest					
	Boys	Per cent	Girls	Per cent	TOTAL	Per cent
Over-concerned	179	3.2	132	2.5	311	2.9
Very interested	1811	32.7	1989	37.6	3800	35.1
Shows some interest	2283	41.2	2077	39.2	4360	40.3
Shows little or no interest	901	16.3	743	14.0	1644	15.2
Can't say or inapplicable	360	6.5	354	6.7	714	6.6
Total information	5534	100	5295	100	10829	100
No data	2		2		4	
TOTAL	5536		5297		10833	

Chi-squared (Trend) = 15.8;  $p < 0.001$

Two assessments were made of parental interest. The first was a subjective assessment by the teachers who were asked to rate the mother's

and father's interest with regard to their child's educational progress. This had the limitations of any subjective estimate. On the other hand, the teacher could take into account a number of factual indications of parental interest besides personal contact, such as the children's comments and parents' attendances at school meetings.

The second assessment was of a more objective nature. Head teachers were asked if, since September, 1964, the parents had taken the initiative to discuss the child, even briefly, with any member of the teaching staff. Despite the advantage of greater objectivity, this question also had its limitation because certain parents, however much they were interested in their child's educational progress, might have been unable to visit the school. The results for the subjective assessment of the teachers are presented in Tables 46 and 47.

**Table 47.** Teachers' ratings of paternal interest

	Paternal interest					
	Boys	Per cent	Girls	Per cent	TOTAL	Per cent
Over-concerned	83	1.5	59	1.1	142	1.3
Very interested	1269	23.0	1283	24.3	2552	23.6
Shows some interest	1259	22.8	1117	21.1	2376	22.0
Shows little or no interest	960	17.4	793	15.0	1753	16.2
Can't say or inapplicable	1949	35.3	2036	38.5	3985	36.9
Total information	5520	100	5288	100	10808	100
No data	16		9		25	
TOTAL	5536		5297		10833	

Chi-squared (Trend) = 7.2;  $0.01 > p > 0.001$

The difference between the assessments of the mothers' reported interest and the fathers' in the 'can't say' category would be expected as so many fathers cannot – even if they wish – visit their children's school during the day because of working hours. Even so, teachers felt able to comment on the interest of 63 per cent of the children's fathers. Approximately 75 per cent of the mothers and 46 per cent of the fathers were rated as showing some interest or being very interested in their child's educational progress.

It is worth noting that the proportion of mothers (15.2 per cent) and of fathers (16.2 per cent) reported as showing little or no interest was almost the same. This seems to indicate that teachers were able to give an

equally definite rating for each parent in this category despite fathers' greater difficulty in making daytime visits.

The teachers' ratings show a significantly different tendency for parents to take a greater interest in the girls' educational progress than in the boys'. This is rather unexpected, as it contrasts with parental attitudes towards the education of older children; then the reverse is the case, with boys' scholastic progress being considered of much greater importance, and greater numbers of boys staying on at school beyond the compulsory school leaving age.

Although such trends as do appear tend to favour the girls, the difference in the parents' interest shows rather a complex pattern with no clear-cut results. It is also possible that this finding is due to some bias in the teachers' ratings. Since girls' school performance is better than boys', the teachers' ratings of parental interest may be influenced by a knowledge of the child's performance; i.e., if a child is doing well at school, the teachers may make an assumption of parents' interest in the child's educational progress.

With regard to the second, more objective, criterion used to assess parental interest, it can be seen (Table 48) that during the current school year 57 per cent of parents took the initiative to discuss their children with one of the teaching staff.

**Table 48.** Parental approach to school staff

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Have approached school staff	3183	57.5	2972	56.1	6155	56.9
Haven't approached school staff	2348	42.4	2321	43.8	4669	43.1
Total information	5531	100	5293	100	10824	100
No data	5		4		9	
TOTAL	5536		5297		10833	

Chi-squared = 1.2 (1 d.f.);  $p > 0.05$  not significant

It would be expected that contact between staff and parents would be easier at the infant school stage, when it is more likely that parents will accompany their children to and from school and the general atmosphere is more informal. Even so, it seems that 43 per cent of the parents

of this sample had not initiated any contact with school staff during the period in question.

It can be considered that parental interest in their children's education will to some extent be a reflection of the school's own attitudes and interest in the children's families. A further question was asked to find out more about the amount of personal contact between staff and parents, initiated by the staff. Head teachers were asked if there had been any discussion with the parents about their child 'at the instigation of you or your teaching staff'. The replies to this question are shown in Table 49.

**Table 49.** School instigation of discussion

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
School has instigated discussion with parents	1531	27.7	1231	23.2	2762	25.5
School has not instigated discussion with parents	3996	72.3	4065	76.8	8061	74.5
Total information	5527	100	5296	100	10823	100
No data	9		1		10	
TOTAL	5536		5297		10833	

Chi-squared = 28.3 (1 d.f.);  $p < 0.001$

The staff had instigated discussion with 25.5 per cent of the children's parents. There is a difference of 4 per cent in the proportion of boys and girls discussed. This difference was highly significant statistically. It may, in part at least, be due to the fact that boys in the sample made less satisfactory progress in reading and were less well-adjusted in school (see Section V G). Hence, teachers would feel greater concern about their progress and be more anxious to talk to parents about it.

There will be some parents who, as well as having initiated a discussion themselves, will also have discussed their child at the teachers' instigation. After allowance had been made for the overlap between these two groups, a final total was estimated of the number of children whose parents and teachers were reported as having had some discussion about them. This total amounted to 65 per cent of the children in this sample; thus, from September to near the end of the school year, about two thirds of the seven-year-olds in the Study had been jointly considered by their

teachers and parents. Further analysis of parents' interest in their children's educational progress and its relationship to other factors will be made at a later stage. However, an analysis of reading ability and parental interest is made in Section VI C.

### 8. PARENTAL ASPIRATION

As an indication of a more general attitude to education, mothers were asked if they would like their child to be able to stay on at secondary school after the minimum school leaving age.

**Table 50.** Parents wanting children to stay on at secondary school after minimum school leaving age

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Yes	3345	82.4	3132	79.8	4677	81.2
No	176	4.3	169	4.3	345	4.3
Other	154	3.8	174	4.4	328	4.1
Don't know	382	9.4	449	11.4	831	10.4
Total information	4057	100	3924	100	7981	100
No data	2		2		4	
GRAND TOTAL	4059		3926		7985	

Chi-squared = 11.6 (3 d.f.);  $0.01 > p > 0.001$

The statistical evidence shows that there is a difference between the answers given by parents of boys and by parents of girls. More parents of the boys than of the girls wanted them to stay on at school after the minimum school leaving age. It will be noted that of the criteria of parental interest so far examined, this is the only indication of more interest being taken in boys' education than in girls.'

This question was answered in the affirmative by 81 per cent of the mothers. Of the remainder, only 4 per cent gave an unqualified 'No'.

Of course, at this early age when the actual decision is many years' ahead and less realistic, a socially more acceptable answer is likely to be given. Very probably, parental attitudes will undergo changes during the years until this question confronts them as an immediate issue. Nevertheless, the present result would seem to indicate a favourable climate of opinion towards continued secondary education beyond the statutory leaving age.

## 9. SUMMARY

- (a) Most of the data in this section were obtained from 7,985 completed Parental Questionnaires. The statistically significant but not marked bias in this sub-sample suggests that findings relating to adverse conditions are likely to underestimate the incidence of such circumstances in the total cohort.
- (b) The present occupations of the children's fathers were grouped according to the Registrar General's five Social Class divisions, and the distribution was compared with those of the 'late returns' and of a national sample. The Social Class divisions formed the basis of a regrouping of the fathers' occupations into the five Occupational Groups which are used for the main socio-economic classification in this report.
- (c) Approximately 6 per cent of the children were not living with both of their natural parents.
- (d) Approximately 9 per cent were living in households in which they were the only child; 77 per cent in households of two, three or four children; and 14 per cent in households where there were five or more children.
- (e) Approximately 11 per cent of the children were living in 'overcrowded' conditions.
- (f) About two thirds of the children had moved home once or more since they were born. Approximately 13 per cent had moved twice and a further 13 per cent three or more times.
- (g) Since the age of five 15.4 per cent of the children had changed school once and 2.5 per cent two or more times.
- (h) Of the 10,645 children for whom this information was available, 70 per cent were recorded as having a school attendance rate of 90 per cent or higher. About 9 per cent of the sample had a record of below 80 per cent attendance.
- (i) Some 57 per cent of parents had approached a member of the school staff in the current academic year in order to discuss their children. There was no significant difference between the parents of boys and girls in this respect. Teachers' ratings of parental interest on the other hand seemed to show that the girls' parents were more interested in their children's educational progress than the boys'. However, it is possible that the teachers ratings may have been influenced to an extent by the better progress of the girls. Of the 26 per cent of children

whose teachers had instigated discussion with parents, there were significantly more boys than girls.

- (j) About 81 per cent of the parents said they would like their children to stay on at school after the minimum school leaving age.

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## G. Behaviour and adjustment

### 1. INTRODUCTION

This section is concerned with aspects of the children's behaviour and adjustment in school and home, as reported by their teachers and mothers. Here, as in other sections of this interim report, the total number of children included in different tables varies. The reasons for this have already been explained.

The evidence (see Section II B, 'Description of the Sample') that the children for whom Parental Questionnaires had been received in time for inclusion in the present report were better adjusted in school than those for whom a Parental Questionnaire had not been received, is

particularly relevant to any interpretation of results in this section. It is reasonable to assume that the former group would also be better adjusted at home. Thus, where results are presented here which are derived from mothers' reports of children's behaviour, the figures may under-estimate to some extent the incidence in the total sample, when the behaviour in question is indicative of difficulties.

However, there is no expectation that any such bias will effect comparisons between the sexes.

There is one other general factor which should be stressed. Although all figures presented in this report should be seen in relation to the circumstances in which the information was collected and the way in which questions were put, it is particularly important to have this in mind when assessing the validity of data about behaviour and adjustment. An attempt has been made to reduce reporting error or bias by gathering, wherever possible, current rather than retrospective data. Nevertheless, in many questions what is being assessed is essentially a facet of a relationship between two people (a mother and a child, a teacher and a child) rather than simply an objective fact about a child. In the case of the mother's report of the children's behaviour, these were given to a third person, usually a health visitor.

This factor does not invalidate the results but it does mean, particularly when statistics are seen as incidences, that the total framework must be borne in mind. Thus, for the sake of convenience and brevity, a sub-section is here entitled 'Children's Happiness at School'; in essence, however, the figures tell what the mothers *reported* about their children's happiness at school when posed a particular question on one occasion by a health visitor. It is possible that if the enquiry had been carried out by post, if the mothers had had time to consult their husbands, or if the question had been put by or to teachers, by psychologists, or by a trained team of interviewers, then the results obtained may have been somewhat different. On the other hand, it would be foolish to disregard the results on this account unless there was evidence that a question on this topic, and posed under these circumstances, produced a very distorted picture. No method of enquiry is faultless, but each has limitations. Where there is a possibility of distortion or bias, the implications are considered.

Information was obtained about the children's behaviour and adjustment in order, first, to test certain hypotheses about general adjustment, as well as particular facets of it, in relation to other factors; to examine, if comparable information can be collected on these children as they mature, the ways in which patterns of behaviour shown at 7 years of age change or remain constant at later ages; to provide some data on the behaviour of a representative group of 7-year-olds; and to compare the

sexes at this age. Although the last point is here mentioned separately, it should, strictly, be included with the first since a relationship is examined between two variables, namely behaviour and the sex of the children.

In the present section only the last two points are covered: descriptive data are given and the sexes are compared. Sub-section 2 deals with the children's behaviour and adjustment as assessed by their teachers; and in sub-section 3 results are presented for different aspects of behaviour as reported by mothers.

## 2. BEHAVIOUR AND ADJUSTMENT - TEACHERS' ASSESSMENTS

### (a) *Settling down period on starting school*

The head teachers were asked whether on starting school the children settled down within a month; within 1-3 months; or remained unsettled after 3 months. Since the children's present schools will not always have been their first ones, the results do not relate to the settling down period on first starting school; nevertheless, over 82 per cent of the children had been to one school only (see Section V F: 'Environmental Factors').

There will be some loss of reliability due to the fact that the data are retrospective by some 2 years in the majority of cases. There is also the possibility of some distortion of the results for individual children. Thus, if a child is now quite 'normal' and well-adjusted, there is perhaps less likelihood of an unsettled period 2 years ago being remembered.

**Table 51.** Settling down period on starting school

Settling down period	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Within 1 month	3783	74.3	3883	78.6	7666	76.4
1-3 months	949	18.6	817	16.5	1766	17.6
Unsettled after 3 months	358	7.0	241	4.9	599	6.0
Total assessed	5090	100	4941	100	10031	100
Can't say	348		287		635	
Inapplicable	86		64		150	
No data	12		5		17	
GRAND TOTAL	5536		5297		10833	

Chi-squared (Trend) = 31.6;  $p < 0.001$

Chi-squared (Departure) = 0.3 (1 d.f.);  $p > 0.05$  not significant

The results are presented in Table 51 and relate to children in 'ordinary' maintained and independent schools. The large number of children listed as 'Can't say' is most likely to be a reflection of the difficulty of obtaining retrospective information from schools because of staff changes. It will be seen that the figures for these children have not been percentaged since there is no reason to believe that if the information had been available, they would not have been distributed proportionately in the other categories. Where a child had been at a school less than 3 months, the full range of possible answers was not open to the head teachers. These children were therefore coded as 'Inapplicable'.

It will be seen that, as judged by this criterion, the great majority of the children (94 per cent) had settled down on starting at a first or a new school within 3 months.

The difference between the sexes was highly significant statistically. The trend, furthermore, persisted through the three categories. The girls were reported to have settled down in school more quickly than the boys.

The possibility of some distortion of the results for individual children has already been discussed. It was suggested that a child's present behaviour may influence a teacher's memory of a facet of his behaviour 2 years before. It may be that such retrospective distortion is partly or wholly responsible for the present findings. Thus, there is evidence that the boys in the sample were less well-adjusted in school (see sub-section 2 (b) of the present section). The difference between the sexes demonstrated above may, then, reflect their present behaviour.

However, the fact that the same difference between the sexes is evident when the mothers' reports of the children's settling-down period on first starting school are examined (see sub-section 3 (b)) makes it less likely that the present findings are spurious. Nevertheless, the possibility cannot be ruled out that the same factors were operating in the mothers' retrospective reporting.

Under the circumstances, the evidence of a sex difference here must be regarded as tentative at the present stage. Further research is needed to confirm the results.

#### (b) *Bristol Social-Adjustment Guide scores*

The difficulties of obtaining a reliable and valid measure of adjustment are very considerable; much less progress has been made by psychologists in this field than, for example, in measuring intellectual abilities and attainments.

Furthermore, in a study of this magnitude of 7-year-olds, one is confined to an assessment of the children's adjustment by some other person. As has been mentioned earlier, one is essentially obtaining a

measure of a relationship between two persons: in this case a child and his teacher. This is not irrelevant since social adjustment cannot be viewed in isolation, but in individual cases there will be differences between a child's adjustment as seen by different teachers.

Such differences, however, are less likely to be marked if, instead of obtaining global assessments, one asks specific questions about particular aspects and behaviour. The Bristol Social-Adjustment Guide (Stott, 1963) in effect does this. The Guide consists of a large number of descriptions of behaviour and the teacher is asked to underline those descriptions which best fit the child. Aspects of behaviour which appear to be deviant are specially coded and it is therefore possible, by summing these items for an individual child, to obtain a quantitative assessment of social-adjustment in school; the higher the score, the more manifestations of deviant behaviour have been noted by the teacher.

It is obvious that a child's behaviour can be deviant in many ways. Thus, he may be unforthcoming, aggressive, or over-demanding. A total score masks all these different facets and therefore its use is only warranted as a relatively crude assessment which may be useful in certain kinds of analyses, or as a first step before a more detailed and sophisticated analysis.

At the present stage in this study, there has been time only to examine total scores. For convenience, and as a first step, it has been decided to classify the children as proposed by Stott: children with a score from 0 to 9 are grouped and called 'stable'; those with a score from 10 to 19 are called 'unsettled'; and the children with a score of 20 or more are called 'maladjusted'. The groups are therefore operationally defined in these terms. Thus, no assumption is made that children with a score of 20 or more are maladjusted in any sense other than that defined above.

The results are presented in Tables 52 and 53. A word of explanation is needed about these figures. In both tables, the numbers involved are several hundred less than the number of Guide scores available. This reduction is due to technical difficulties arising from the data processing; there is no reason to believe that the children excluded are different from the ones included in any specific way.

In Table 52 the figures for children in all categories of school have been extracted from a more detailed table not presented in this report, in which there was a breakdown by Occupational Group and Sex. Where there were no data on either the sex of the child (very few) or the occupation of the father, the children were excluded. This sub-sample is known to be biased in that they are better adjusted in school than those where the Occupational Group was known (see Introduction to present section). Although this bias is not expected to affect a comparison of the sexes, the

combined figures would be biased. However, the figures given in Table 53 include all the children in schools (including special schools) in the present sample for whom a score was available, and there is no evidence of bias in this group.

**Table 52.** Bristol Social-Adjustment Guide scores – boys and girls

Score	Boys		Girls	
	N	Per cent	N	Per cent
'Stable' (Score 0-9)	1929	59.5	2376	73.7
'Unsettled' (Score 10-19)	808	24.9	587	18.2
'Maladjusted' (Score 20+)	507	15.6	260	8.1
Total assessed	3244	100	3223	100

Chi-squared (Trend) = 158.7;  $p < 0.001$

Chi-squared (Departure) = 2.2 (1 d.f.);  $p > 0.05$  not significant

**Table 53.** Bristol Social-Adjustment Guide scores – combined sexes

Scores	N	Per cent
'Stable' (Score 0-9)	6280	64.0
'Unsettled' (Score 10-19)	2223	22.6
'Maladjusted' (Score 20+)	1314	13.4
Total assessed	9817	100

The comparison between the sexes in Table 52 shows a highly significant difference: the girls were better adjusted in school. Approximately 60 per cent of the boys were 'stable' as against 74 per cent of the girls; on the other hand, nearly 16 per cent of the boys were 'maladjusted' compared with 8 per cent of the girls. The results, strictly interpreted, apply only to this form of assessment. Nevertheless, in view of the very marked differences shown, the firm conclusion is warranted that at this age boys show more indications of poor adjustment in school than girls.

This result confirms that found by Crawford (1966) who used the Guides in a Liverpool study on 773 boys and girls aged 7 and 8 years.

Two points should be borne in mind. First, the results derived from total scores may mask other factors. Thus, despite an overall difference between the sexes, it may be that detailed examination of the data will show no differences between the sexes in particular facets of adjustment; or, even, that girls show more deviant behaviour in some ways. For example, boys may be more aggressive or over-demanding and girls may be more timid or withdrawn. This further detailed study of the data will be undertaken later.

Secondly, since this sub-sample is known to be biased in relation to adjustment in school, the percentages shown in Table 52 should not be taken as representative figures for the sexes.

In Table 53 the results are presented for a larger sample of children, since no other results are available for this test on a national sample of this size. There is no expectation of bias in these results.

It was stressed earlier that the definitions of 'stable', 'unsettled' and 'maladjusted' are operational ones and refer only to scores on the Guides. The grouping used by Stott and others has been adopted as a first step, and to permit comparison with other studies. To say, therefore, that the present findings indicate that over 13 per cent of 7-year-olds are maladjusted is to say no more than that over 13 per cent of 7-year-olds are likely to obtain a total score of 20 or more on the Social-Adjustment Guides.

It would be taking too extreme a view to say that the term 'maladjusted' means all things to all men. Nevertheless, the difficulties of establishing some reliable criterion of maladjustment against which to validate an objective score such as is derived from the Guide, are considerable.

From a practical viewpoint there is an obvious need to establish the proportion of school children who would benefit from some form of psychological help, or from psychiatric treatment. The need for such information was underlined by the Underwood Committee (H.M.S.O., 1955), and the Scottish Education Department (H.M.S.O., 1964). It is hoped at a later stage to throw some light on this matter with the data available on this cohort of children; and also to examine in some detail the factors which are associated with maladjustment.

### 3. BEHAVIOUR AND ADJUSTMENT — MOTHERS' REPORTS

#### (a) *Happiness at school*

The mothers were asked: 'Is the child happy at his/her present school?' The answers were pre-coded by the interviewers into the categories shown in Table 54. The results are for children in all types of school.

**Table 54.** Happiness at school

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Happy	3708	92.1	3694	94.5	7402	93.2
Not altogether happy	302	7.5	205	5.2	507	6.4
Unhappy	18	0.4	12	0.3	30	0.4
Total information	4028	100	3911	100	7939	100
Don't know	30		15		45	
No data	0		1		1	
GRAND TOTAL	4058		3927		7985	

Chi-squared (Trend) = 17.3;  $p < 0.001$

Chi-squared (Departure) = 0.8; (1 d.f.);  $p > 0.05$  not significant

The difference between the sexes is highly significant. A strict interpretation of the results would be that girls at this age are reported by their mothers to be happier at school than boys. However, there is some indirect evidence from the present study to indicate that this may be interpreted as a meaningful difference between the sexes in the extent to which they are in fact happy at school. Thus, the independent assessments of the teachers showed that girls are markedly better adjusted at school and it is reasonable to assume that this would be reflected in their 'happiness'.

Nevertheless, the subjectivity of this question imposes a need for caution, particularly in viewing the percentage figures in the three categories. One must consider the possibility that the mothers may have seen their answers as a reflection upon the school, although there is no reason to believe that any such tendency would have acted in one direction only. Further, it had to be left to the interviewer to make a reasoned judgment about which category to code in the light of the mother's answer.

However, within the limitations of this type of question the overall results are extremely encouraging from an educational standpoint and do credit to the teachers and schools concerned.

(b) *Settling down period on first starting school*

Information about the length of the settling down period on first starting school was obtained from the mothers. The same question was also put to the head teachers (see sub-section 2 (a) of the present section), although their replies would relate to the children's settling down in their present school, which would not necessarily have been their first one.

Some of the children attended a private or a local authority nursery class or school, and the results for these are presented in Table 55; and relate to the settling down period on commencing nursery schooling. In Table 56 the results are given for children who did not attend a nursery class or school. Although these results were obtained by sorting punched cards, it was possible to include a few (52) additional children so that the totals for Tables 55 and 56 are slightly higher than for tables in the remainder of this section. The children involved were in all categories of school.

**Table 55.** Settling down period on first starting school  
(Nursery class/nursery school attenders)

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Within a month	506	83.0	502	88.7	1008	85.7
Within 1-3 months	56	9.2	39	6.9	95	8.1
Still unsettled after 3 months	48	7.9	25	4.4	73	6.2
Total information	610	100	566	100	1176	100
Don't know	2		5		7	
GRAND TOTAL	612		571		1183	

Chi-squared (Trend) = 8.6;  $0.01 > p > 0.001$

Chi-squared (Departure) = 0.03 (1 d.f.);  $p > 0.05$  not significant

**Table 56.** Settling down period on first starting school  
(Non-nursery class/nursery school attenders)

	Boys		Girls		TOTAL	
	N	Per cent	N	Per cent	N	Per cent
Within a month	2804	82.1	2814	84.4	5618	83.2
Within 1-3 months	322	9.4	293	8.8	615	9.1
Still unsettled after 3 months	289	8.5	228	6.8	517	7.7
Total information	3415	100	3357	100	6802	100
Don't know	29		21		50	
No data	1		1		2	
GRAND TOTAL	3475		3379		6854	

Chi-squared (Trend) = 7.6;  $0.01 > p > 0.001$

Chi-squared (Departure) = 0.1 (1 d.f.);  $p > 0.05$  not significant

It has not been possible at the present time to examine statistically any differences between the settling down period for those who attended a nursery class or school and those who did not. Inspection of the tables suggests no very marked overall differences but a straightforward comparison of these tables is likely to be misleading; a more sophisticated analysis is needed which takes into account other factors which may be associated with nursery school attendance.

In both tables, however, the results indicate that girls are considered by their mothers to settle down more quickly than boys on first starting school. Although confirming the results obtained in a comparison of the sexes on the teachers' assessments (see sub-section 2 (a) of this section), the same reservations expressed there apply to the above results.

The overall figures are not strictly comparable with the teachers' assessments given in Table 51, both because of the bias in the present sub-sample and also because the teachers were not necessarily assessing the children's settling down period on first starting school. Furthermore, any difference between Tables 51 and 56 may be due to the fact that mothers and teachers see the situation from different standpoints.

### (c) *Developmental difficulties*

It was decided to seek information from mothers about developmental difficulties which occurred largely in the home. Three steps were taken to increase the reliability of the data. First, mothers were asked to say whether any of the difficulties had occurred over a prescribed period; namely, 'during the last 3 months'. Secondly, specific aspects of behaviour were selected so that it was reasonable to ask for a straightforward 'Yes' or 'No', although a 'Don't know' reply was included in the coding. Thirdly, if the behaviour had occurred only during a period of acute infection, the interviewers were asked to code the answer as 'Inapplicable'.

The results are presented in Table 57 and relate to all children in the present sample for whom information was available, whether they were in school or not. Percentage figures only are given here and they refer to children whose mothers reported that the behaviour in question occurred during the 3 months prior to the interview. The small numbers of children where 'Don't know' or 'Inapplicable' was coded have been excluded from the percentaging. The full details, including the actual numbers of children in each category, are contained in Table A4 of Appendix 1. Although the results are presented in one table, the categories are, of course, not mutually exclusive and a child may appear under more than one category.

**Table 57** (*Percentaged*). Developmental difficulties occurring over a 3-month period

Number of Boys = 4058

Number of Girls = 3927

Total = 7985

Developmental difficulties	Boys Per cent	Girls Per cent	Total Per cent	Chi-squared (2 d.f.)	P value
Has complained of headaches (more than once)	20.3	20.9	20.6	0.4	$> 0.05$ not sig.
Has had temper tantrum	29.8	27.1	28.5	7.1	$0.01 > p > 0.001$
Has been reluctant to go to school	12.2	9.6	11.0	13.9	$< 0.001$
Has had bad dreams or night terrors	17.2	16.1	16.6	1.6	$> 0.05$ not sig.
Has had difficulty in getting off to sleep	18.1	20.2	19.1	5.8	$0.05 > p > 0.01$ not sig.
Has sleepwalked	3.1	3.4	3.2	0.8	$> 0.05$ not sig.
Has been faddy — many dislikes over food	27.8	30.4	29.1	6.2	$0.05 > p > 0.01$ not sig.
Has had poor appetite	15.4	17.7	16.5	7.5	$0.01 > p > 0.001$
Has over-eaten for more than the occasional meal	7.1	6.0	6.5	3.7	$> 0.05$ not sig.

In examining the table, one must take account of two main factors. First, the bias in this sub-sample, discussed in the introduction to this section, may mean that some of the figures quoted under-estimate the incidence in the total population of 7-year-olds in the country. Nevertheless, it would be unwise to over-stress the effect or the importance of this bias in considering the value of the results. Its effect is unlikely to be marked and it should be viewed within the framework of the limitations inevitably imposed upon data of this kind collected in a large survey. One is dependent upon the mothers' reports, which may be influenced by such factors as their own personalities, education, tolerance level, and the attitude of the interviewer; further, the behaviour was reported to

have occurred over a particular period of time which, if changed, may have produced somewhat different figures.

Thus, the results in relation to many other kinds of data are of a crude nature. The fact that figures are given to one decimal place must not be taken as implying that exact information is being obtained. On the other hand, no clinician, no teacher, no social worker would claim that information he obtained is without its own limitations. The value of data gathered on a large group of children is that it provides workers in this field with a frame of reference, a 'backcloth' against which to view the normality or deviance of behaviour manifested by an individual child, or a group of children, of this age. It will also permit the changing pattern of behaviour to be studied as the children grow towards maturity, if – as is hoped – further information can be gathered upon them. Neither the limitations discussed, nor the bias, are likely to affect the overall pattern of the results, the relative incidence of different difficulties. Thus, it will be seen that the reported occurrence of a temper tantrum or of faddiness is not uncommon; about 30 per cent of the children were reported to have shown these aspects of behaviour. Sleepwalking, on the other hand, is reported as occurring only in a small minority of children of this age.

The second main factor which must be borne in mind is that the figures apply to behaviour in the home as seen by mothers. For some aspects of behaviour, such as difficulties in sleeping, this is the only appropriate framework within which to view the data. However, other behaviour, such as food-faddiness or temper tantrums, manifests itself in other situations – in school, for example. It is highly likely that if information on these aspects of behaviour had been obtained from teachers, different results would have been obtained because children behave differently in different circumstances.

None of these aspects of behaviour in isolation should be seen as an indication of poor adjustment. Nevertheless, it is likely that some are more symptomatic of emotional disturbance than others. In addition, a number of workers have shown that a simple summation of reported behavioural difficulties for individual children provides some measure of adjustment which is associated with poor educational performance and other factors. It is intended to investigate this further at a later stage and to see which difficulties and which combination of difficulties are most closely related to other factors, both in the home and in the school.

With regard to a comparison between the sexes in the reported occurrence of the 'developmental difficulties' set out in Table 57 it will be seen that for only three items was there a significant difference. The 'P' values are given, and for reasons which are explained in Section IV: 'Statistical

Analysis', the level of 0.01 has been selected as the one which in this report is used as the criterion of statistical significance.

There is clear evidence from the present findings that, as reported by mothers, more boys than girls show reluctance to go to school; that more boys have temper tantrums at this age; and that more girls are considered to have poor appetites.

(d) *Other aspects of children's behaviour*

In addition to the behaviour reported by mothers which has been discussed in the previous sub-section, the mothers were asked about other aspects of behaviour. Although in the Parental Questionnaire and in this report the two groups of items are presented separately, there is no clear-cut distinction between them from a psychological viewpoint. The developmental difficulties already discussed were so described because this seemed an appropriate term. Nevertheless, some of the aspects of behaviour discussed in this section might equally well have been described as difficulties.

One major reason for separating these two groups of items in the questionnaire was that for some aspects of behaviour it seemed appropriate to ask for a straightforward answer as to whether or not the behaviour had occurred during a prescribed period; for the behaviour discussed here it seemed more appropriate to enquire whether 'at the present time' it happened 'frequently', 'sometimes' or 'never'.

The results are presented in Table 58 and relate to all children in the sample for whom the information was available, whether they were in school or not. The figures are given in percentage form and where an answer was coded 'Don't know', or 'Inapplicable' it has been excluded from the percentaging and also from the table. The full details are included in Table A5 of Appendix 1.

Of course, the same factors as were discussed in the previous sub-section should be considered in taking account of the results in Table 58.

A number of aspects of behaviour appear to be common at this age: disobedience, and fighting with other children were reported to occur frequently or sometimes in about 60 per cent of the children. In contrast, twitches or mannerisms were reported in less than 8 per cent. The reported incidence of nail-biting (26 per cent) was about half that obtained by Birch (1955) in a local study utilising teachers' reports and more objective criteria. Preferring to do things alone rather than with others stands out as an aspect of behaviour which was reported to occur frequently in a substantial minority of the children (over 22 per cent).

**Table 58** (*Percentaged*). Other aspects of children's behaviour

Number of Boys = 4058

Number of Girls = 3927

Total = 7985

Behavioural descriptions	Boys Per cent	Girls Per cent	Total Per cent	Chi- squared (Trend)	<i>P</i> value
Has difficulty in settling to anything for more than a few moments					
Frequently	8.4	6.0	7.2		
Sometimes	26.1	21.9	24.0	41.2	< 0.001
Never	65.5	72.0	68.7		
Prefers to do things on his/her own rather than with others					
Frequently	22.9	21.9	22.4		
Sometimes	45.9	44.7	45.3	3.8	> 0.05 not sig.
Never	31.1	33.3	32.2		
Is bullied by other children					
Frequently	5.3	4.4	4.9		
Sometimes	32.5	27.8	30.2	24.1	< 0.001
Never	62.2	67.8	65.0		
Destroys own or others' belongings (e.g. tears or breaks)					
Frequently	4.3	1.6	3.0		
Sometimes	16.2	8.4	12.4	168.1	< 0.001
Never	79.5	90.0	84.7		
Is miserable or tearful					
Frequently	4.4	4.8	4.6		
Sometimes	36.8	42.1	39.4	21.6	< 0.001
Never	58.8	53.1	56.0		
Is squirmy or fidgety					
Frequently	12.9	10.3	11.6		
Sometimes	33.3	31.4	32.4	20.3	< 0.001
Never	53.8	58.3	56.0		

**Table 58** (*continued*)

Behavioural descriptions	Boys Per cent	Girls Per cent	Total Per cent	Chi- squared (Trend)	<i>P</i> value
Worries about many things					
Frequently	11.5	12.3	11.9	3.0	> 0.05 not sig.
Sometimes	36.0	37.1	36.6		
Never	52.5	50.6	51.6		
Is irritable, quick to fly off the handle					
Frequently	11.9	10.9	11.4	6.9	0.01 > <i>p</i> > 0.001
Sometimes	38.0	36.0	37.0		
Never	50.1	53.1	51.6		
Sucks thumb or finger during day					
Frequently	4.8	7.9	6.4	58.5	< 0.001
Sometimes	5.4	8.3	6.8		
Never	89.8	83.7	86.8		
Is upset by new situations, by things happening for first time					
Frequently	5.8	5.2	5.5	1.2	> 0.05 not sig.
Sometimes	22.4	24.9	23.6		
Never	71.8	69.9	70.9		
Has twitches or mannerisms of the face, eyes or body					
Frequently	2.6	1.5	2.0	21.7	< 0.001
Sometimes	6.5	4.8	5.6		
Never	91.0	93.7	92.3		
Fights with other children					
Frequently	7.7	2.9	5.3	526.2	< 0.001
Sometimes	61.4	41.0	51.4		
Never	30.8	56.1	43.3		
Bites nails					
Frequently	10.5	12.6	11.5	29.7	< 0.001
Sometimes	12.0	16.1	14.0		
Never	77.5	71.3	74.5		

**Table 58** (*continued*)

Behavioural descriptions	Boys Per cent	Girls Per cent	Total Per cent	Chi- squared (Trend)	<i>P</i> value
Is disobedient at home					
Frequently	4.6	3.4	4.0		
Sometimes	60.0	52.7	56.4	60.9	< 0.001
Never	35.4	43.9	39.6		

In all but three items, the difference between the sexes was statistically significant or highly significant when tested for trend. The two most marked differences were both in aggressive behaviour; twice as many boys as girls were reported as destroying their own or others' belongings; and about 70 per cent of the boys fought with other children, whilst only 44 per cent of the girls did so. In general it was the boys who more often showed deviant behaviour, but more of the girls were nail biters and sucked their thumb or finger during the day.

As with the behaviour difficulties described in the previous sub-section it is intended to examine the aspects of behaviour discussed here in more detail at a later stage.

#### 4. SUMMARY

- (a) On starting at their present school, 94 per cent of the children in 'ordinary' maintained and independent schools in the sample were judged by their teachers to have settled down in school within 3 months.

There was evidence that girls settle down more quickly than boys in infant classes, but in view of the fact that the data were retrospective and may have been influenced by present behaviour, this conclusion was regarded as tentative.

- (b) The evidence here was very clear that girls at this age in all categories of school are markedly better adjusted than boys when a relatively crude overall assessment is made in terms of the total score of the Bristol Social-Adjustment Guide.

It was noted that this overall assessment may mask other differences between boys and girls when more specific aspects of behaviour are examined. This more detailed analysis will be done at a later stage.

- (c) Approximately 93 per cent of a sub-sample of 7,985 children in all categories of school were reported by their mothers to be happy in school.

There was also a highly significant tendency for more girls to be reported as happy at school than boys.

- (d) Of the children who had attended a private or local authority nursery class or nursery school some 94 per cent were reported by their mothers to have settled down within 3 months of first starting nursery schooling.

Of the children who had not attended a nursery class or nursery school, about 91 per cent were reported by their mothers to have settled down within 3 months of first starting school.

No statistical analysis was made to test any difference between these two groups of children in relation to the settling down period because a straightforward comparison might have been misleading. No conclusions were therefore drawn.

The evidence from a comparison of the sexes in both groups, however, suggested that girls settle down more quickly than boys.

- (e) Percentage figures were given for the reported incidence of nine 'developmental difficulties' for boys and for girls. In only three was there a significant difference between the sexes: there was evidence that more boys than girls are reluctant to go to school; more boys than girls have temper tantrums; and more girls are felt to have poor appetites.

- (f) Information was gathered from mothers about fourteen other aspects of children's behaviour.

In all but three items there was a significant difference between the sexes in reported incidence. In general, boys at this age are more often reported to show deviant behaviour at home.

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## VI. Inter-relationship of the variables

### A. Educational factors

#### I. READING AND ARITHMETIC IN RELATION TO OCCUPATIONAL GROUP

##### (a) *Introduction*

There is overwhelming evidence for a relationship between general socio-economic factors and general educational progress. What are therefore now needed are more investigations of particular aspects of the environment in relation to particular facets of educational progress and, indeed, to child development in general.

At the present stage in this Study there has not been time to examine many aspects of the environment in relation to educational factors: and such statistical analyses as have been carried out have been relatively straightforward. More elaborate analyses will be carried out later.

In this section two facets of educational performance – in reading and in arithmetic – are analysed in relation to the Occupational Group of the children's fathers, or male heads of household.

##### (b) *Occupational Group and attainment in reading*

The ability to read is of central importance to children's progress in school. Once mastered, it is a skill which opens many doors. Whilst most schools now lay more stress upon activities, upon learning through experience and upon oral work in the classroom than was once the case, it remains true that a child who finds reading difficult is gravely handicapped in almost all spheres of his school work.

Other investigations have shown a relationship between the socio-economic level of a child's family and his reading ability, although few studies have been made of this relationship for children in infant schools. It is not difficult to think of reasons for this strong relationship. In general parents in higher socio-economic groups are more intelligent than those in the other socio-economic groups; thus, their children will tend to be

more intelligent and, as a result, better readers. Although no general consensus of opinion exists about the precise contribution which heredity makes towards intellectual functioning, there can be no reasonable doubt that it does play a part (Burt, 1960).

In addition to heredity, and interacting with it, is the influence of the environment in which a child grows. A home in which books and reading material of all kinds are an integral and valued part of daily life is one which is most likely to lay the foundation for the rapid acquisition of reading skill by a child. Reading for him is seen as something which gives his parents enjoyment and which has a purpose. He comes to school, then, wanting to read and may already have made a start.

Motivation is a potent factor but the influence of the home environment does not rest there. The written word is a symbol which enables the author to convey his thoughts, his ideas and concepts to the reader. If the reader finds difficulty in understanding these thoughts, then any ability to articulate the words will be of little value. True reading ability, then, is more than merely a skill in decoding written symbols; it is an ability to use this skill in understanding what the author is trying to convey. It follows that a home which fosters this true reading ability best is one in which the level of verbal expression is at its highest; where there is a feeling for the spoken word as a tool for conveying precise meaning; where the vocabulary is rich and varied; and where children are stimulated by questions about the world around them and by explanations appropriate to their age.

The factors which have been discussed are complex and extremely difficult to quantify, particularly in large scale investigations such as the present one. Nevertheless, it is reasonable to assume that in general the socio-economic level of the home, much easier to categorise, will be related to these factors. A great deal of information is known about the occupation and education of the parents and the grandparents of the children in the present Study. It is hoped to use this information to arrive at some measure of the social-educational-economic background of the children in order to investigate at a later stage the relationships between this and other factors in the children's development.

Further, it is hoped within the limitations set by the relative crudity of some of the data – virtually inescapable in any large survey – to examine the relationship between particular aspects in the environment and particular facets of children's development. This, however, needs a far more elaborate statistical analysis than there has yet been time to carry out.

As a first step, the relationship is here examined between the Occupational Groups of the children's fathers – as an index of the

socio-economic level of the family – and one aspect of children's development, namely reading ability. In sub-section (c) of this section the same analysis is made of arithmetical ability.

The results are given in Table 59 for all the children in the present sample in 'ordinary' maintained and independent schools for whom all the requisite information was available. As the index of reading ability, the children's scores on the Southgate Reading Test are used because of their objectivity. Children with a score of 28 or more out of a possible 30 are grouped and operationally defined as 'good readers'; those with a score less than 28 are grouped and called 'medium and poor readers'. Percentage figures only are given in the table below. The actual numbers of children in each category are given in Table A6 of Appendix 1.

**Table 59.** Southgate Test score and Occupational Group of the father

N=6834

Reading groups	Occupational Group					TOTAL
	1	2	3	4	5	
'Good readers' (Score 28-30)	56.2	54.9	36.3	31.2	23.3	40.7
'Poor and medium readers' (Score < 28)	43.8	45.1	63.7	68.8	76.7	59.2
TOTAL	100	100	100	100	100	100

Chi-squared (Trend) = 289;  $p < 0.001$

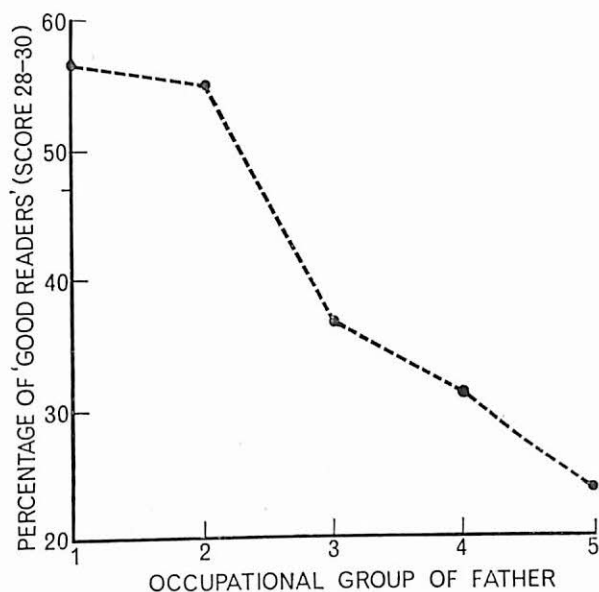
Chi-squared (Departure) = 25.7 (3 d.f.);  $p < 0.001$

The difference between the two reading groups in relation to Occupational Group is highly significant. There is thus clear evidence that in children of this age the lower the 'status' of the fathers' occupations, the poorer the reading attainment of the children. However, there is statistical evidence that this 'falling off' of reading attainment through the Occupational Groups is not uniform.

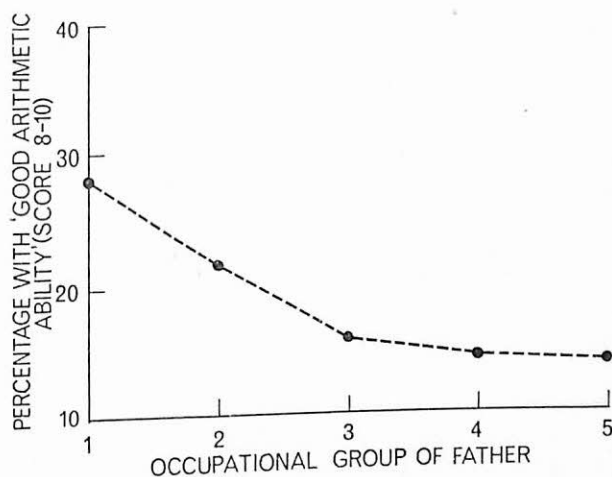
An inspection of the table and Figure 6 suggests that this is because there is little difference between the reading performance of children whose fathers have non-manual occupations (Occupational Groups 1 and 2), but that these children are sharply differentiated from the children whose fathers are skilled, semi-skilled or unskilled workers (Occupational Groups 3, 4 and 5). Nevertheless, the figures indicate that reading performance continues to 'fall away' through the three manual groups.

**Figure 6.** Southgate Test score and Occupational Group of father

N = 6834

**Figure 7.** Problem Arithmetic Test score and Occupational Group of father

N = 6824



Although the overall tendency is clear and statistically highly significant, and the fact of some departure from this general tendency has also been shown, more sophisticated analysis is needed to establish the validity of the speculations advanced in the above paragraph. This analysis will be done at a later stage.

It will be recalled that the Southgate Test is a measure of word recognition and not of reading comprehension. It may be that the relationship between Occupational Group and reading for comprehension is stronger than that between Occupational Group and word recognition. Later analysis of the results for the two other assessments of reading ability obtained in this study should throw some light on this question.

(c) *Occupational Group and attainment in arithmetic*

Much less attention has been given by research workers to the relationship between arithmetic ability and environmental factors compared with the number of studies of reading. This is understandable since reading plays a more important part in determining children's general progress in school than does arithmetic. Nevertheless, arithmetical ability does impinge upon many other school subjects and it is probably true to say that its importance both in school and in later life will grow along with the rapid technological advances of modern life.

**Table 60.** Problem Arithmetic Test score and Occupational Group of the father

N = 6824

Arithmetic groups	Occupational groups					TOTAL
	1	2	3	4	5	
'Good arithmetical ability' (Score 8-10)	28.1	21.9	15.9	14.5	14.1	18.7
'Medium and poor arithmetical ability' (Score 0-7)	71.9	78.1	84.1	85.5	85.9	81.3
TOTAL	100	100	100	100	100	100

Chi-squared (Trend) = 103;  $p < 0.001$

Chi-squared (Departure) = 16.6 (3 d.f.)  $< 0.001$

It was decided, therefore, to investigate the relationship between the children's arithmetical ability and environmental factors. As with reading ability, the first step was to examine arithmetical ability in

relation to socio-economic status. Again, the Occupational Group of the father is taken as the index of socio-economic status at this stage. The Problem Arithmetic Test score is used as the measure of arithmetical ability.

The results are given in percentage form in Table 60; the actual numbers of children in each category are given in Table A7 of Appendix 1. All children in the present sample who were in 'ordinary' maintained and independent schools are included where all the requisite data were available. Children with a score on the Problem Arithmetic Test of 8 or more out of a possible 10 are grouped and operationally said to have 'good arithmetical ability'; those with a score of 7 or less have 'medium and poor arithmetical ability'.

As the table shows, the proportion of children with 'good arithmetical ability' in the present sample fell from about 28 per cent in Occupational Group 1 to about 14 per cent in Occupational Group 5.

The evidence from the statistical tests is that this tendency is highly significant and one may conclude that in children of this age performance on a test of problem arithmetic is related to the socio-economic status of the family; the lower the status of the fathers' Occupational Group, the lower the scores of the children. However, as with the corresponding analysis of reading ability, this overall tendency for performance to 'fall away' through the Occupational Groups is not uniform.

An inspection of Table 60, and of Figure 7 showing the pattern of results for children of 'good arithmetical ability' in graph form, suggests that there is a differentiation between children in Occupational Groups 1, 2 and 3 (children of non-manual workers and skilled manual workers) but little, if any, difference between the performance of children in Occupational Groups 3, 4 and 5 (children of manual workers) in terms of the criteria adopted.

However, the comments in the preceding paragraph must remain speculative at this stage. Further statistical analysis must be carried out to clarify the position.

#### (d) *Summary*

The evidence from the two preceding sub-sections points clearly to a relationship between the Occupational Group of children's fathers and children's attainment both in reading and in arithmetic at the age of 7. In both analyses there was evidence that this general relationship is not uniform from one Occupational Group to another.

These should be seen, however, as two separate analyses; it is not valid to make direct comparisons between the two, even at the speculative level. It will be recalled that the criterion of 'good' reading ability included

about 40 per cent of the children whereas the children with 'good arithmetical ability' were the top 19 per cent of children, as assessed by their scores on the Problem Arithmetic Test.

At a later stage comparisons will be made between reading and arithmetic ability in relation to socio-economic factors, but this will necessitate different and more elaborate statistical techniques.

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## **B. School Variables**

### **I. LENGTH OF SCHOOLING, EDUCATIONAL ATTAINMENT AND ADJUSTMENT IN SCHOOL**

#### *(a) Introduction*

There is evidence from other investigations, reviewed by Pidgcon (1965), that younger children in an age group are at a disadvantage educationally. Thus, summer born children have been shown to predominate over autumn born children in the lower streams of schools; in special schools for educationally subnormal children; and in remedial groups for backward readers. It has been suggested that one of the important factors in this situation is the length of schooling received.

Within a given administrative situation most children start their schooling at specified times in the school year, usually at the beginning of a term, according to their dates of birth. In some areas children commence at the beginning of the term in which they attain the age of 5 or, even, at the beginning of the school year in which they become 5; in others they start school at the beginning of the term following their 5th birthday.

However, whatever the procedure, except for one intake of children per year, older children start school first and the younger children follow at intervals during the school year. This means that the older ones have the advantage not only of greater maturity by reason of their age but also of a longer period in school.

Under most circumstances the assessment of the relationship between the length of schooling and subsequent educational performance presents some difficulties because the children who spend the most time in school are also the older ones. Due allowance must therefore be made for the age of the children and, ideally, allowance must also be made for any possible interaction between the age of the children and the length of schooling they have received.

In the present study, however, the children are all of the same age. An opportunity presented itself, therefore, for examining the educational attainment and social-adjustment of children nearing the end of their infant schooling who were of the same age but had had varying lengths of schooling. It was decided to restrict the analysis to two major groups: those who had started school when aged between 4 years 6 months and 4 years 11 months, and those who started school between the ages of 5 years and 5 years 5 months, as reported by their mothers. Since all of the children in the cohort had their 5th birthday in early March, 1963, the latter group would have started school in the summer term, 1963, and it is known that the majority of the former children started the term before, in January, 1963. These two groups are here referred to as 'early starters' and 'late starters'. Children who had attended a nursery class or a nursery school were excluded from the groups.

In addition, it was decided to take into account the occupations of the children's fathers since this may be an important variable. The Occupational Group of the father is an indication of the socio-economic status of the family; further, since in general parents of higher socio-economic status are also more intelligent, their children will in general be more intelligent than children of parents in lower Occupational Groups.

Thus, it is important to ascertain not only whether children with the advantage of an early start in their schooling are doing better in school some 2 years later, but whether any such relationship exists independent of the socio-economic status of the children's families.

It may be, for example, that the children of professional parents, because of their higher intelligence and the intellectual stimulation in the home, are able to make good the deficit of later starting when compared with children of the same socio-economic status who start school earlier. On the other hand, such children may, because of these same characteristics, be able to maintain an advantage over children of the same socio-economic status who have started later.

Another reason why allowance should be made for the Occupational Group is that children whose fathers are in, say, Occupational Groups 4 and 5 are more likely to live in areas where schools are crowded and where there is a particularly acute teacher shortage. In such areas, schools may more often admit children later rather than earlier because of staffing difficulties. If this were the case then a simple comparison between 'early starters' and 'late starters' might produce a spurious result since the latter group might contain a larger proportion of children from lower socio-economic groups. Thus, any difference between the two groups might be associated with socio-economic factors rather than with the length of schooling received.

In this section then, the 'early starters' and the 'late starters' are compared for reading ability as measured by the Southgate Reading Test; for arithmetical ability, as measured by the Problem Arithmetic Test; and for social-adjustment, as assessed by the total score on the Bristol Social-Adjustment Guide.

Children included are those in the sample in maintained infant, junior with infants or all-age schools, or in independent schools catering wholly or mainly for children who are not handicapped. Children excluded are those who had attended nursery schools and those for whom all the appropriate information was not available when the data were processed (e.g. age of starting school, Occupational Group of the father).

(b) *Length of schooling and reading attainment*

(i) *Analysis ignoring socio-economic factors.* The most straightforward way of examining the relationship between 'early' and 'late' starting in school and reading attainment in the present sample is simply to compare the reading performance of the two groups when they were tested near the end of their infant schooling.

**Table 61** (*Percentaged*). Length of schooling and Southgate Reading Test score.

N = 5251

Ages of commencing school	Southgate Reading Test score			TOTAL
	'Good readers' (Score 28-30)	'Medium readers' (Score 16-27)	'Poor readers' (Score 0-15)	
'Early starters' (4 years 6 months to 4 years 11 months)	43.4	43.4	13.2	100
'Late starters' (5 years to 5 years 6 months)	36.2	43.6	20.3	100
TOTAL	40.0	43.5	16.5	100

Chi-squared (Trend) = 52.3;  $p < 0.001$

Thus, the children were divided into three categories on the basis of their scores on the Southgate Reading Test: the 'good readers' with a score of 28 to 30; the 'medium readers' with a score from 16 to 27; and the 'poor readers'. The results are given in Table 61; percentage figures

**Table 62** (*Percentaged*). Occupational Group of the father, length of schooling and Southgate Reading Test score.

N = 5251

Occupational Groups	Ages of commencing school	Southgate Reading Test score		TOTAL
		'Good' readers (Score 28-30)	'Medium and poor' readers (Score 0-27)	
1	'Early starters' 4 years 6 months to 4 years 11 months	58.0	42.0	100
	'Late starters' 5 years to 5 years 5 months	47.8	52.3	100
2	'Early starters' 4 years 6 months to 4 years 11 months	61.9	38.1	100
	'Late starters' 5 years to 5 years 5 months	51.2	48.8	100
3	'Early starters' 4 years 6 months to 4 years 11 months	39.2	60.8	100
	'Late starters' 5 years to 5 years 5 months	36.7	67.3	100
4	'Early starters' 4 years 6 months to 4 years 11 months	33.1	66.9	100
	'Late starters' 5 years to 5 years 5 months	28.2	71.8	100
5	'Early starters' 4 years 6 months to 4 years 11 months	25.7	74.3	100
	'Late starters' 5 years to 5 years 5 months	22.5	77.5	100
TOTAL		40.0	60.0	100

Chi-squared (partial association) = 29.1;  $p < 0.001$ Chi-squared (2nd order interaction) = 1.94 (4 d.f.)  $p < 0.05$  not significant

only are given here, but this table is given in Appendix 1 with the actual numbers of children in all the categories (Table A8).

It will be seen that the 'early starters' were better readers than the 'late starters' when this criterion of reading performance was used. The difference between the groups in reading ability is highly significant.

Thus, one may conclude that children of the same age who make an earlier start with their schooling (aged 4 years 6 months to 4 years 11 months) are better readers, as measured by a test of word recognition, near the end of their infant schooling than those who make a later start (aged 5 years to 5 years 6 months). In the present sample the difference in the length of schooling between the two groups compared was, for the majority of the children, only one term.

(ii) *Analysis allowing for socio-economic factors.* Although the overall relationship between length of schooling and reading ability at seven years of age has been demonstrated, this relationship may not be the same for children from all socio-economic backgrounds.

In Table 62 the 'early starters' and 'late starters' are grouped according to the Occupational Group of their fathers. Further, the particular statistical analysis used necessitated dividing the children into two groups according to their reading ability. It was decided that it would be most appropriate to compare the 'good readers' with the 'medium and poor' readers. Again, percentage figures are given here and the actual numbers of children are given in Appendix 1, Table Ag.

It will be seen that in each Occupational Group the 'early starters' had a higher proportion than the 'late starters' of 'good readers' and a smaller proportion of children of 'medium and poor' reading ability.

The evidence from the two statistical tests carried out (see Section IV: 'Statistical Analysis') is that there is a highly significant difference between the 'early starters' and the 'late starters' independent of Occupational Group.

Thus, the conclusion is warranted that children of the same age who start school 'early' (aged 4 years to 4 years 11 months) are better readers near the end of the infant schooling – irrespective of the Occupational Groups of their fathers – than children who start school 'late' (aged 5 years to 5 years 5 months).

### (c) *Length of schooling and arithmetic attainment*

(i) *Analysis ignoring socio-economic factors.* Once again the most straightforward analysis is presented first.

The 'early starters' and 'late starters' were divided into three categories according to their score on the Problem Arithmetic Test. Those with a score of 8 to 10 were defined as having 'good arithmetical ability';

those scoring from 3 to 7 had 'medium arithmetical ability'; and the children scoring 2 or below were defined as having 'poor arithmetical ability'.

The percentaged results are given in Table 63. Table A10 in Appendix 1 shows the actual numbers of children in each of the categories.

**Table 63** (*Percentaged*). Length of schooling and Problem Arithmetic Test score

N = 5242

Ages of commencing school	Problem Arithmetic Test score			TOTAL
	'Good arithmetical ability' (Score 8-10)	'Medium arithmetical ability' (Score 3-7)	'Poor arithmetical ability' (Score 0-2)	
'Early starters' (4 years 6 months to 4 years 11 months)	19.9	66.3	13.8	100
'Late starters' (5 years to 5 years 5 months)	16.1	66.1	17.8	100
TOTAL	18.1	66.2	15.7	100

Chi-squared (Trend) = 23.7;  $p < 0.001$

The difference between the 'early starters' and 'late starters' in arithmetical ability, as measured by this test, is highly significant.

Thus, if no account is taken of socio-economic factors, the conclusion is warranted that children of the same age who start school 'early' (aged 4 years 6 months to 4 years 11 months) achieve better scores on a problem arithmetic test near the end of their infant schooling than children who start school 'late' (aged 5 years to 5 years 5 months).

(ii) *Analysis allowing for socio-economic factors.* As with reading ability, a more detailed analysis was carried out which allowed for socio-economic factors in so far as these are assessed by the Occupational Groups of the fathers.

For this statistical analysis, it was necessary to place the children into two groups on the basis of their scores on the Problem Arithmetic Test. It was decided, as with the corresponding analysis of reading ability, to place the children with 'good arithmetic ability' (with a score of 8 to 10) in one group; and those with 'medium and poor arithmetic ability' (with a score below 8) in the other.

**Table 64** (*Percentaged*). Occupational Group of the father, length of schooling and Problem Arithmetic Test score

N = 5242

Occupational Groups	Ages of commencing school	Problem Arithmetic Test score		TOTAL
		'Good arithmetical ability' (Score 8-10)	'Medium and poor' arithmetical ability' (Score 0-7)	
1	'Early starters' 4 years 6 months to 4 years 11 months	28.2	71.8	100
	'Late starters' 5 years to 5 years 5 months	22.7	77.3	100
2	'Early starters' 4 years 6 months to 4 years 11 months	24.8	75.3	100
	'Late starters' 5 years to 5 years 5 months	21.0	79.0	100
3	'Early starters' 4 years 6 months to 4 years 11 months	17.6	82.4	100
	'Late starters' 5 years to 5 years 5 months	14.0	86.1	100
4	'Early starters' 4 years 6 months to 4 years 11 months	15.2	84.9	100
	'Late starters' 5 years to 5 years 5 months	13.6	86.4	100
5	'Early starters' 4 years 6 months to 4 years 11 months	17.1	82.9	100
	'Late starters' 5 years to 5 years 5 months	10.6	89.4	100
TOTAL		18.1	81.9	100

Chi-squared (partial association) = 12.8;  $p < 0.001$ Chi-squared (2nd order interaction) = 1.4 (4 d.f.);  $p > 0.05$  not significant

The percentage figures are given above in Table 64 and the actual numbers of children in each category are detailed in Table A11 of Appendix 1.

There was a higher proportion of 'early starters' than 'late starters' in each Occupational Group with 'good arithmetical ability' and a smaller proportion with 'medium and poor' arithmetical ability.'

The evidence from the two statistical tests carried out (see Section IV: 'Statistical Analysis') is that there is a highly significant difference between the 'early starters' and the 'late starters' independent of Occupational Group.

The conclusion is warranted that, in terms of performance on a test of problem arithmetic, children of the same age who start school 'early' are as a group more advanced near the end of their infant schooling than children who start school 'late' irrespective of the Occupational Group of their fathers.

(c) *Length of schooling and adjustment in school*

(i) *Analysis ignoring socio-economic factors.* As in the previous two subsections, the simplest analysis is presented first; 'early starters' and 'late starters' are compared in terms of their adjustment in school without regard for any factors except for the length of their schooling.

**Table 65** (*Percentaged*). Length of schooling and adjustment in school

N = 4917

Ages of commencing school	Adjustment in school			TOTAL
	'Stable' Total Score 0-9	'Unsettled' Total Score 10-19	'Maladjusted' Total Score 20 +	
'Early Starters' 4 years 6 months to 4 years 11 months	69.5	19.7	10.8	100
'Late Starters' 5 years to 5 years 5 months	64.9	22.6	12.4	100
TOTAL	67.4	21.1	11.6	100

Chi-squared (Trend) = 9.9;  $0.01 > p > 0.001$

The two groups were divided into three categories on the basis of total scores on the Bristol Social-Adjustment Guides. Those with a score

**Table 66** (*Percentaged*). Occupation of the father, length of schooling and adjustment in school

N=4917

Occupational Groups	Ages of commencing school	Adjustment in school		TOTAL
		'Stable' Total score 0-9	'Unsettled and Maladjusted' Total score 10 +	
1	'Early starters' 4 years 6 months to 4 years 11 months	75.0	25.0	100
	'Late starters' 5 years to 5 years 5 months	72.7	27.3	100
2	'Early starters' 4 years 6 months to 4 years 11 months	78.1	21.9	100
	'Late starters' 5 years to 5 years 5 months	76.2	23.8	100
3	'Early starters' 4 years 6 months to 4 years 11 months	68.6	31.4	100
	'Late starters' 5 years to 5 years 5 months	63.9	36.1	100
4	'Early starters' 4 years 6 months to 4 years 11 months	64.0	36.0	100
	'Late starters' 5 years to 5 years 5 months	58.5	41.5	100
5	'Early starters' 4 years 6 months to 4 years 11 months	59.3	40.7	100
	'Late starters' 5 years to 5 years 5 months	46.9	53.1	100
TOTAL		67.4	32.6	100

Chi-squared (partial association) = 11.3;  $p < 0.001$ Chi-squared (2nd order interaction) = 2.66 (4 d.f.);  $p > 0.05$  not significant

from 0 to 9 were called 'stable'; those with a score between 10 and 19 were operationally defined as 'unsettled'; and those with a score of 20 or more were called 'maladjusted'.

The results in percentage form are given in Table 65. In Table A12 of Appendix 1 the actual numbers of children in each category are detailed. It will be noted that the total number of children involved in this analysis is some 300 less than in the corresponding analyses for reading and arithmetic. This is because fewer Bristol Social-Adjustment Guides were available for data processing when this was carried out.

As the table on page 127 shows, there was a higher proportion of 'stable' children amongst the 'early starters' and a smaller proportion of 'unsettled' and 'maladjusted' children. The difference between the 'early starters' and the 'late starters' is statistically significant.

There is thus evidence that in terms of the criteria adopted, children of the same age who start school 'early' are better adjusted in school near the end of their infant schooling than children who start school 'late'.

(ii) *Analysis allowing for socio-economic factor.* In Table 66 results are given, separately, for 'early starters' and 'late starters' in the five Occupational Groups.

The difference between the adjustment in school of 'early starters' and 'late starters' was analysed independent of the Occupational Group of their fathers. In order to carry out this particular statistical analysis, 'unsettled' and 'maladjusted' children were grouped together to contrast with 'stable' children.

The numbers of children in each category are detailed in Table A13 of Appendix 1.

It will be seen that in each Occupational Group there was a higher proportion of 'stable' children amongst the 'early starters' and a smaller proportion of 'unsettled and maladjusted' children.

The evidence from the two statistical tests (see Section IV: 'Statistical Analysis') is that there is a highly significant difference between the adjustment in school of the 'early starters' when compared on this criterion with that of the 'late starters'.

One may conclude that children of the same age who start school 'early' are better adjusted in school near the end of their infant schooling than those who start school 'late', irrespective of the Occupational Groups of their fathers.

#### (c) *Summary*

The highly significant results obtained in the three previous sub-sections only permit one, strictly, to make inferences in terms of the assessments

used. Nevertheless, the conclusion is warranted that children of the same age who commence full-time infant schooling before the age of 5 are, as they approach the transfer to junior schools or classes some 2 years later, more advanced educationally and better adjusted in school than those who commence school after the age of 5, irrespective of the socio-economic status of their families.

It must be borne in mind that this relationship is not necessarily a causal one; one cannot conclude without further evidence that the relatively poorer performance of later starters is the direct effect of less time spent in school. It may be that both the age of commencing school and educational attainment at 7 years of age are related to another factor or factors. For example, if it were true that earlier starting in school were more common in the south of England than in the north and also that educational standards were higher in the south, this may account wholly, or partly, for the demonstrated relationship. This regional factor, and others, will be investigated at a later stage.

It may be thought that even if a causal relationship could be demonstrated, the topic is of academic interest and has few practical implications since in a given area it is normal for children of the same age to start school at the same time. Further, any effect of length of schooling might be assumed to diminish and even to disappear as children grow older.

Nevertheless, despite the fact that children of the same age in a particular area generally start school at the same time, some borderline has to be drawn and children whose ages differ by only a few days or weeks have different lengths of time in school.

Furthermore, since there is evidence (Pidgeon, 1965) that younger children in an age group are at a disadvantage, educationally, compared with older ones, it is important to investigate the factors which contribute to this situation. If the length of schooling is one of these factors, then it may be possible to take practical steps to ameliorate the position.

Finally, although it appears to be a reasonable assumption that any effects of length of schooling may diminish with time, the assumption would need to be verified. It may not be true for all children under all circumstances. For example, the importance of the children's level of intelligence may be an important factor, as may the size or organisation of the junior schools or departments to which they transfer.

### *References*

- PIDGEON, D. A. 'Date of Birth and Scholastic Performance', *Educational Research*, Vol. 8, No. 1. (National Foundation for Educ. Research) (1965).

### C. Environmental factors

#### I. PARENTAL SITUATION

##### (a) *Introduction*

Research evidence supports the thesis that the general progress of children who are not living with both their own natural parents is likely to be less satisfactory than that of children who are. The greater part of research in this country is based on findings from children who have shown difficulties which have required special action. The present study provides an opportunity to compare children living in 'atypical' family circumstances, irrespective of whether or not they are receiving any specialised help, with a large group of children of the same age and otherwise similar background. For the sake of brevity the group of children living with their own parents will be described as 'normal' and those not living with both natural parents will be described as 'atypical'.

It might be expected that a comparison of the children from 'normal' family settings with those from 'atypical' ones would show certain differences in growth and development. Children not living with both natural parents are more likely to have been subject to adverse experiences which may play an important part in their emotional development or their general progress.

Both the total set of circumstances that lead to children living in an 'atypical' parental situation and the children's growth and development within the 'atypical' setting are likely to be associated with socio-economic status. Comparisons were made, therefore, between children from 'normal' and 'atypical' home backgrounds for reading ability as a major indication of progress at school. The comparison between the two groups was made for boys and girls and within Occupational Group. The proportions of the children living in 'normal' and 'atypical' parental situations within each Occupational Group are given in Part (b) of this section.

The 'normal' group included those children reported by their mothers to be living with or cared for by both natural parents. The 'atypical' group covered children reported as having only one natural parent because of illegitimacy, desertion, divorce, separation or death; those with one step-parent; as well as children who were adopted, fostered or in care. Children whose parental situation was not known have been excluded from this second group although it is likely that a number of them will eventually be found to belong to it. An analysis of the different types of parental situation within the 'atypical' group in relation to other factors will be possible at a future stage.

Information about the children's families was gathered on the Parental Questionnaires. In the totals from the punched card analysis

(see Section V: 'Environmental Factors') 6 per cent of the children for whom there was information were living in an 'atypical' situation. This is likely to be an underestimate of the proportion in the total cohort because mothers of children with no male head of household are more likely to be in full-time work, so that in consequence their completed Parental Questionnaires would have a greater chance of being among the 'late' returns not included in the present sample.

In this section the totals were all derived from computer analysis and will vary according to the number of children within the two groups for whom there was appropriate information. All the analyses were of children both in 'ordinary' maintained and independent schools and of children in 'special' schools. The seventy three children whose schools could not be classified and the very few who were resident in hospital were not included.

The two groups of children were compared wherever possible for three variables: sex; Occupational Groups of the fathers; and Southgate Reading Test Scores. Two-way tables showing the position in the sample as a whole are given before tables showing three-way breakdowns.

**Table 67.** Occupational Group of father by parental situation

(Boys and girls combined)

N = 6896

Occupational Groups	Parental situation	N	Per cent
1	'Normal'	1355	97.3
	'Atypical'	37	2.7
2	'Normal'	719	96.1
	'Atypical'	29	3.9
3	'Normal'	3068	95.8
	'Atypical'	136	4.2
4	'Normal'	1109	94.8
	'Atypical'	61	5.2
5	'Normal'	356	93.2
	'Atypical'	26	6.8
All Occupational Groups	'Normal'	6607	95.8
	'Atypical'	289	4.2

Chi-squared (Trend) = 17.1;  $p < 0.001$

Chi-squared (Departure) = 0.8 (3 d.f.);  $p > 0.05$  not significant

*(b) Parental situation and Occupational Groups*

About a third of the children living in an 'atypical' family situation were those without a father or a male head of household and so could not be included in the results presented in Table 67. (It is realised that this group of children in households without fathers may have some special characteristics.)

The proportion of children living in an 'atypical' family situation showed a highly significant and consistent increase from Occupational Group 1 through to Occupational Group 5. Of the children in Occupational Group 1, 2.7 per cent were not living with their own parents compared with 6.8 per cent of children in Occupational Group 5.

*(c) Parental situation and Southgate Reading Test score*

The association between Reading Score and Parental Situation was tested for boys and girls separately. The children's scores on the Southgate Reading Test (for detailed description see Section III B.3) were classified into three groups:

'Poor readers' with a score from 0 to 15; 'Medium readers' with a score from 16 to 17; and 'Good readers' with a score from 28 to 30.

**Table 68.** Parental situation and Southgate Reading Test for boys

N = 3448

Parental situation	'Poor readers' Score 0-15		'Medium readers' Score 16-27		'Good readers' Score 28-30		TOTAL	
	N	Per cent	N	Per cent	N	Per cent	N	Per cent
'Normal'	684	20.7	1446	43.8	1170	35.4	3300	100
'Atypical'	43	29.0	71	48.0	34	23.0	148	100

Chi-squared (Trend) = 11.3;  $p < 0.001$

Chi-squared (Departure) = 0.2 (1 d.f.);  $p > 0.05$  not significant

There was a highly significant association between the two parental situation groups and the three reading groups. More boys in the 'normal' group had high reading scores (35.4 per cent) than those in the 'atypical' group (23 per cent) and conversely among the latter the proportion of 'poor readers' was higher; 29 per cent compared with 20.7 per cent.

For girls, the same overall pattern was found; there is a significant association with reading in the two groups with a higher proportion of girls who were 'good readers' (47.1 per cent) in the 'normal' group than in the 'atypical' group (34.1 per cent).

**Table 69.** Parental situation and Southgate Reading Test for girls

N = 3404

Parental situation	'Poor readers' Score 0-15		'Medium readers' Score 16-27		'Good readers' Score 28-30		TOTAL	
	N	Per cent	N	Per cent	N	Per cent	N	Per cent
'Normal'	403	12.3	1326	40.6	1537	47.1	3266	100
'Atypical'	22	15.9	69	50.0	47	34.1	138	100

Chi-squared (Trend) = 7.7; 0.01 >  $p$  > 0.001Chi-squared (Departure) = 1.3 (1 d.f.);  $p$  > 0.05 not significant(d) *Parental situation, Occupational Group and Southgate Reading Test score*

Three Occupational Groups were formed for this analysis as at this stage in the Study the numbers of children in the 'atypical' group were too

**Table 70.** Occupational Group, parental situation and Southgate Test score

(Boys and girls combined)

N = 6851

Occupational Groups	Parental situation	Southgate Test score						TOTAL	
		'Poor readers' Score 0-15		'Medium readers' Score 16-27		'Good readers' Score 28-30			
		N	Per cent	N	Per cent	N	Per cent	N	Per cent
1 and 2	'Normal'	147	7.1	749	36.4	1162	56.5	2058	100
	'Atypical'	8	12.5	36	56.2	20	31.2	64	100

Chi-squared (Trend) = 14.7;  $p$  < 0.001Chi-squared (Departure) = 1.5 (1 d.f.);  $p$  > 0.05 not significant

3	'Normal'	549	18.0	1383	45.2	1125	36.8	3057	100
	'Atypical'	35	26.1	66	49.3	33	24.6	134	100

Chi-squared (Trend) = 10.3; 0.01 >  $p$  > 0.001Chi-squared (Departure) = 0.0 (1 d.f.);  $p$  > 0.05 not significant

4 and 5	'Normal'	391	26.9	640	44.1	420	28.9	1451	100
	'Atypical'	21	24.1	38	43.7	28	32.2	87	100

Chi-squared (Trend) = 0.5;  $p$  > 0.05 not significantChi-squared (Departure) = 0.0 (1 d.f.);  $p$  > 0.05 not significant

small for a five-fold classification. The two non-manual Occupational Groups (1 and 2) formed the first new grouping and the partly skilled and unskilled workers in Occupational Groups 4 and 5 formed the second new grouping.

For Occupational Groups 1 and 2 combined, as well as for Occupational Group 3, the difference in the children's reading scores in the two parental situations was highly significant or significant; children in the 'normal' group had consistently higher reading scores than those in the 'atypical' group. However, in Occupational Groups 4 and 5 this was not the case, there being no significant difference in the reading scores of the 'atypical' and 'normal' groups.

Two possible interpretations of this result are, first, that an 'atypical' parental situation may be only one of a number of potentially adverse environmental factors which occur relatively more often in Occupational Groups 4 and 5 and so is less discernible as a factor in isolation in relation to the children's reading progress. Secondly, it is possible that the patterns of family and neighbourhood life in these two Occupational Groups mitigate some of the possible difficulties of children in an 'atypical' situation.

#### (e) *Summary*

- (i) There was evidence from the present Study of an association between parental situation and socio-economic status; there being a consistent tendency for the number of 'atypical' parental situations to increase from Occupational Group 1 through to Occupational Group 5.
- (ii) An association was demonstrated between poor reading ability and 'atypical' parental situation which was highly significant for boys and significant for girls.
- (iii) There was a highly significant association between reading ability and parental situation for Occupational Groups 1 and 2 combined and a significant association with Occupational Group 3; the 'normal' group showing better reading ability. However, there was no such association within Occupational Groups 4 and 5 combined.

## 2. PARENTAL APPROACH

### (a) *Introduction*

Parental attitudes to their children's education are related to children's progress in school (for example, Fraser, 1959; Douglas, 1964). Douglas gives evidence that this relationship is highly correlated with his index of socio-economic status; further, the relationship still holds good within

the different social classes irrespective of 'standards of living, size of family and academic record of the school'. The children in the present Study are somewhat younger than those in the majority of studies on this subject.

Only one criterion of parental interest could be used at this stage of the Study. The objective fact, as reported by head teachers, of whether or not parents had initiated discussion about their children was preferred to the more subjective assessment of the parents' interest made by the teachers. Initiating discussion with their children's teachers is only one indication of parents' concern and there will be some parents who find it more difficult to visit the school than others; for example, mothers with other children who are very young. The over-anxious or over-concerned mother who tends to make too frequent enquiries cannot be differentiated under this criterion either.

Head teachers were asked: 'Since September, 1964, have the parents taken the initiative to discuss the child, even briefly, with you or any member of your teaching staff?'

For the sake of brevity children whose parents had initiated discussion will be described as the 'Approached' group and those whose parents had not initiated discussion will be described as the 'Not approached' group.

The replies analysed in the tables in this section concern children both in 'ordinary' maintained and independent schools, and in 'special schools'. The children whose schools could not be classified or who were resident in hospitals were not included.

The association between parental approach and the children's progress has been tested in relation to one major factor in educational progress, namely, reading ability. The reading ability of children in the two groups ('Approached'/'Not approached') was considered in relation to sex and Occupational Group.

#### *(b) Parental approach and Occupational Group*

The results in Table 71 show that about 70 per cent of parents in Occupational Group 1 initiated discussion with teachers compared with some 46 per cent in Occupational Group 5. In all Occupational Groups except Occupational Group 5 a higher proportion of parents had initiated discussion than had not.

The results of the statistical test (trend) showed that there is a highly significant tendency for the proportion of parents who have approached the school to decrease from Occupational Group 1 through to Occupational Group 5. However, the statistical test for departure from a linear relationship showed that this overall tendency is not consistent through

all the paternal Occupational Groups, and, thus, that the decrease from one Occupational Group to another in the proportion of parents who have approached the school is not uniform.

**Table 71.** Occupational Group of father and parental approach

(Boys and girls combined)

N = 6896

Occupational Group	Parental approach	N	Per cent
1	Approached	984	70.7
	Not approached	408	29.3
2	Approached	494	65.9
	Not approached	255	34.0
3	Approached	1727	54.0
	Not approached	1473	46.0
4	Approached	644	54.9
	Not approached	529	45.1
5	Approached	177	46.3
	Not approached	205	53.7
TOTAL	Approached	4026	58.4
	Not approached	2870	41.6

Chi-squared (Trend) = 134.8;  $p < 0.001$

Chi-squared (Departure) = 24.0 (3 d.f.);  $p < 0.001$

An inspection of the table indicates that this departure from the overall tendency for 'parental approach' to fall through the Occupational Groups is because the proportions in the 'Approached' and 'Not approached' groups in Occupational Group 3 and Occupational Group 4 are virtually the same.

*(c) Parental approach and Southgate Reading Test score*

The children included in the following tables were those with Parental Questionnaires returned completed in time for analysis for this report.

The association between reading score and Parental Approach was tested for the total sub-sample and then for boys and girls separately. The children's scores on the Southgate Reading Test (for detailed description see Section III B 3) were classified into three groups: 'Poor readers' –

scoring 0 to 15 on this test; 'Medium readers' – scoring 16 to 27; and 'Good readers' – scoring 28 to 30.

**Table 72.** Parental approach and Southgate Reading Test score

(Boys and girls combined)

N = 6803

Parental approach	'Poor readers' Score 0–15		'Medium readers' Score 16–27		'Good readers' Score 28–30		TOTAL	
	N	Per cent	N	Per cent	N	Per cent	N	Per cent
'Approached'	551	13.8	1632	40.8	1815	45.4	3998	100
'Not approached'	599	21.3	1265	45.1	941	33.5	2805	100

Chi-squared (Trend) = 110.7;  $p < 0.001$

Chi-squared (Departure) = 0.2 (1 d.f.);  $p > 0.05$  not significant

There were significantly more 'good readers' and fewer 'poor readers' and 'medium readers' in the 'Approached' group than in the 'Not approached' group for all the children in this sub-sample.

**Table 73.** Parental approach and Southgate Reading Test score

(Boys only)

N = 3402

Parental approach	'Poor readers' Score 0–15		'Medium readers' Score 16–17		'Good readers' Score 28–30		TOTAL	
	N	Per cent	N	Per cent	N	Per cent	N	Per cent
'Approached'	351	17.2	881	43.1	811	39.7	2043	100
'Not approached'	375	27.6	622	45.8	362	26.6	1359	100

Chi-squared (Trend) = 83.1;  $p < 0.001$

Chi-squared (Departure) = 0.0 (1 d.f.);  $p > 0.05$  not significant

The results in Tables 73 and 74 show that both for boys and for girls there is a highly significant association between reading ability and parental interest, as assessed by these criteria. In the 'Approached' group about 40 per cent of boys and 51.4 per cent of girls were 'good readers' compared with 26.6 per cent of boys and 40 per cent of girls who are 'good readers' in the 'Not approached' group.

**Table 74.** Parental approach and Southgate Reading Test score

(Girls only)

N = 3301

Parental approach	'Poor readers' Score 0-15		'Medium readers' Score 16-27		'Good readers' Score 28-30		TOTAL	
	N	Per cent	N	Per cent	N	Per cent	N	Per cent
'Approached'	200	10.2	751	38.4	1004	51.4	1955	100
'Not approached'	224	15.5	643	44.5	579	40.0	1446	100

Chi-squared (Trend) = 48.2;  $p < 0.001$ Chi-squared (Departure) = 0.6 (1 d.f.);  $p > 0.05$  not significant*(d) Parental approach and Southgate Reading Test score within Occupational Groups*

As can be seen in Table 75, for the boys in each Occupational Group the proportion of 'good readers' in the 'Approached' group was higher than the proportion of 'good readers' in the 'Not approached' group. Conversely, the proportion of 'poor readers' is lower in the 'Approached' group than in the 'Not approached' group in each Occupational Group. For example, in Occupational Group 1, about 52 per cent in the 'Approached' group were 'good readers' compared with 36 per cent in the 'Not approached' group; and only 8 per cent were 'poor readers' in the 'Approached' group compared with 21 per cent in the 'Not approached' group.

For each Occupational Group a statistical test was carried out to determine whether the difference between the reading performance of the two groups was significant. The difference was highly significant for Occupational Groups 1, 3 and 4. Thus, in these three Occupational Groups and in terms of the criteria adopted, children whose parents initiated discussion with teachers are better readers than those whose parents did not.

In Occupational Groups 2 and 5 the results of the statistical testing were not significant although the differences were in the same direction as in the other three Occupational Groups. These results may be due to the relatively smaller number of boys in Occupational Groups 2 and 5. Further interpretation of these results must await more detailed statistical treatment.

Inspection of Table 75 also suggests a difference in 'parental approach' between the parents of 'poor readers' in the manual and non-manual Occupational Groups.

**Table 75.** Occupational Groups, parental approach and Southgate Reading Test score

(Boys only)

N = 3402

Occup. Groups	Parental approach	Southgate Reading Test score						TOTAL	
		'Poor readers' Score 0-15		'Medium readers' Score 16-27		'Good readers' Score 28-30			
		N	Per cent	N	Per cent	N	Per cent	N	Per cent
I	Approached	40	8.0	200	40.2	258	51.8	498	100
	Not approached	31	21.7	61	42.7	51	35.7	143	100

Chi-squared (Trend) = 21.7;  $p < 0.001$ Chi-squared (Departure) = 3.2 (1 d.f.);  $p > 0.05$  not significant

2	Approached	22	9.0	99	40.7	122	50.2	243	100
	Not approached	13	11.4	50	43.9	51	44.7	114	100

Chi-squared (Trend) = 1.1;  $p > 0.05$  not significantChi-squared (Departure) = 0.0 (1 d.f.);  $p > 0.05$  not significant

3	Approached	174	19.6	404	45.6	308	34.8	886	100
	Not approached	194	26.1	353	47.4	197	26.5	744	100

Chi-squared (Trend) = 16.6;  $p < 0.001$ Chi-squared (Departure) = 0.1 (1 d.f.);  $p > 0.05$  not significant

4	Approached	80	24.5	146	44.8	100	30.7	326	100
	Not approached	91	36.7	113	45.6	44	17.7	248	100

Chi-squared (Trend) = 16.2;  $p < 0.001$ Chi-squared (Departure) = 0.2 (1 d.f.);  $p > 0.05$  not significant

5	Approached	35	38.9	32	35.6	23	25.6	90	100
	Not approached	46	41.8	45	40.9	19	17.3	110	100

Chi-squared (Trend) = 1.1;  $p > 0.05$  not significantChi-squared (Departure) = 1.0 (1 d.f.);  $p > 0.05$  not significant

In occupational Groups 1 and 2 more (numerically) of the parents whose children were 'poor readers' were in the 'Approached' group than in the 'Not approached' group. In Occupational Groups 3, 4 and 5, however, the reverse was the case, with fewer parents of 'poor readers' in the 'Approached' group than in the 'Not approached' group.

**Table 76.** Occupational Groups, parental approach and Southgate Reading Test score

(Girls only)

N=3401

Occup. Groups	Parental approach	Southgate Reading Test score						TOTAL	
		'Poor readers' Score 0-15		'Medium readers' Score 16-27		'Good readers' Score 28-30			
		N	Per cent	N	Per cent	N	Per cent	N	Per cent
I	Approached Not approached	17	3.6	147	30.9	311	65.5	475	100
		17	7.9	76	35.3	122	56.7	215	100

Chi-squared (Trend) = 7.4; 0.01 >  $p$  > 0.001

Chi-squared (Departure) = 0.9 (1 d.f.);  $p$  > 0.05 not significant

2	Approached	12	4.8	80	31.9	159	63.3	251	100
	Not approached	3	2.2	58	42.3	76	55.5	137	100

Chi-squared (Trend) = 0.8;  $p$  > 0.05 not significant

Chi-squared (Departure) = 4.4 (1 d.f.); 0.05 >  $p$  > 0.01 not significant

3	Approached	101	12.1	354	42.3	382	45.6	837	100
	Not approached	115	16.0	336	46.6	270	37.4	721	100

Chi-squared (Trend) = 11.8;  $p$  < 0.001

Chi-squared (Departure) = 0.3 (1 d.f.);  $p$  > 0.05 not significant

4	Approached	47	15.3	133	43.3	127	41.4	307	100
	Not approached	57	20.4	132	47.3	90	32.3	279	100

Chi-squared (Trend) = 5.8; 0.05 >  $p$  > 0.01 not significant

Chi-squared (Departure) = 0.2 (1 d.f.);  $p$  > 0.05 not significant

**Table 76** (*Continued*)

5	Approached	23	27.1	37	43.5	25	29.4	85	100
	Not approached	32	34.0	41	43.6	21	22.3	94	100

Chi-squared (Trend) = 1.6;  $p > 0.05$  not significant

Chi-squared (Departure) = 0.0 (1 d.f.);  $p > 0.05$  not significant

As will be seen in Table 76 the overall pattern of results was similar to that of the boys. In each Occupational Group a higher proportion of girls in the 'Approached' group were 'good readers' compared with the proportion of 'good readers' in the 'Not approached' group. There was a lower proportion of 'poor readers' in four of the Occupational Groups among the children whose parents had approached the school than among the children of parents who had not initiated discussion.

Statistical evidence showed the differences between the two groups, 'Approached' and 'Not approached' to be highly significant in Occupational Group 3 and to be significant in Occupational Group 1. The difference between the two groups approached the level of statistical significance in Occupational Group 4.

As with the boys, the differences in reading ability were not significant between the two groups of 'parental approach' in Occupational Groups 2 and 5.

The results presented in Tables 75 and 76 above indicate that the criterion of 'parental approach' as an index of parental interest is associated with reading ability and that this association both for boys and for girls is to some extent independent of socio-economic factors. However, the association justifies a more elaborate statistical approach which should also take account of the other data on parental interest which are available.

#### (e) *Summary*

- (i) There is a highly significant tendency for the proportion of parents who have approached the school to decrease from Occupational Group 1 through to Occupational Group 5, although this trend is not wholly consistent.
- (ii) The differences between the 'Approached' group and the 'Not approached' group are highly significant in relation to reading scores for the boys and for the girls. Boy and girls in the 'Approached' group have better reading ability than in the 'Not approached' group.
- (iii) The differences tended to be in a similar direction within Occupational Groups for boys and girls in relation to reading scores. The

differences between the 'Approached' group and the 'Not approached' group were significant in relation to reading scores for boys and girls separately in Occupational Groups 1 and 3 and for boys in Occupational Group 4.

### *References*

- DOUGLAS, J. W. B. *The Home and the School* (McGibbon and Kee) (1964).  
FRASER, E. D. *Home Environment and the School* (University of London Press) (1959).

## **D. Behaviour and adjustment**

### ADJUSTMENT IN SCHOOL IN RELATION TO OCCUPATIONAL GROUP

The relationship between children's emotional and social adjustment and other factors is one of the most important yet complex aspects of child development. It is important because of its practical implications, not only for children's progress in school and general happiness in childhood, but also for their later integration into adult society, for their careers and their own adequacy as parents; it is complex not only because there are many factors involved which interact with each other, but also because most of these factors are difficult to 'measure' in a meaningful way.

In this section, the children's adjustment in school, as assessed by the total score on the Bristol Social-Adjustment Guides, is related to the Occupational Group of their fathers. As has been explained elsewhere in this report, the Occupational Group is seen as a crude index of the socio-economic status of the family. This variable might seem to be less relevant to a consideration of children's adjustment than, say, to their reading attainment. Certainly, the possibility of a class relationship with attainment in school seems more predictable. The general level of verbal skills, the intellectual stimulation and professional and leisure interests of parents in non-manual occupations contrast sharply with the general pattern to be found in many homes of unskilled manual workers. But what of emotional and social adjustment?

It seems likely, as was indicated in the opening paragraph, that any relationship between adjustment and socio-economic factors will be more complex. A number of studies have shown that patterns of child rearing differ between 'social classes'. It is unlikely however, that any comparison between children from different socio-economic backgrounds will merely reflect this. It is known, for example, that many of the circumstances most likely to have an adverse effect upon children's

adjustment occur more frequently in homes of lower socio-economic status.

**Table 77** (*Percentaged*). Social adjustment and Occupational Group of the father for boys

N=3244

Social adjustment scores	Occupational Groups					TOTAL
	1	2	3	4	5	
'Stable' (Totalscore 0-9)	68.5	67.5	58.7	51.4	42.5	59.5
'Unsettled and maladjusted' (Totalscore 10+)	31.5	32.4	41.3	48.5	57.6	40.5
TOTAL	100	100	100	100	100	100

Chi-squared (Trend) = 64.2;  $p < 0.001$

Chi-squared (Departure) = 3.6 (3 d.f.);  $p > 0.05$  not significant

**Table 78** (*Percentaged*). Social adjustment and Occupational Group of the father for girls

N=3223

Social adjustment scores	Occupational Groups					TOTAL
	1	2	3	4	5	
'Stable' (Totalscore 0-9)	79.4	82.7	71.3	71.4	61.8	73.7
'Unsettled or maladjusted' (Totalscore 10+)	20.6	17.3	28.7	28.6	38.1	26.3
TOTAL	100	100	100	100	100	100

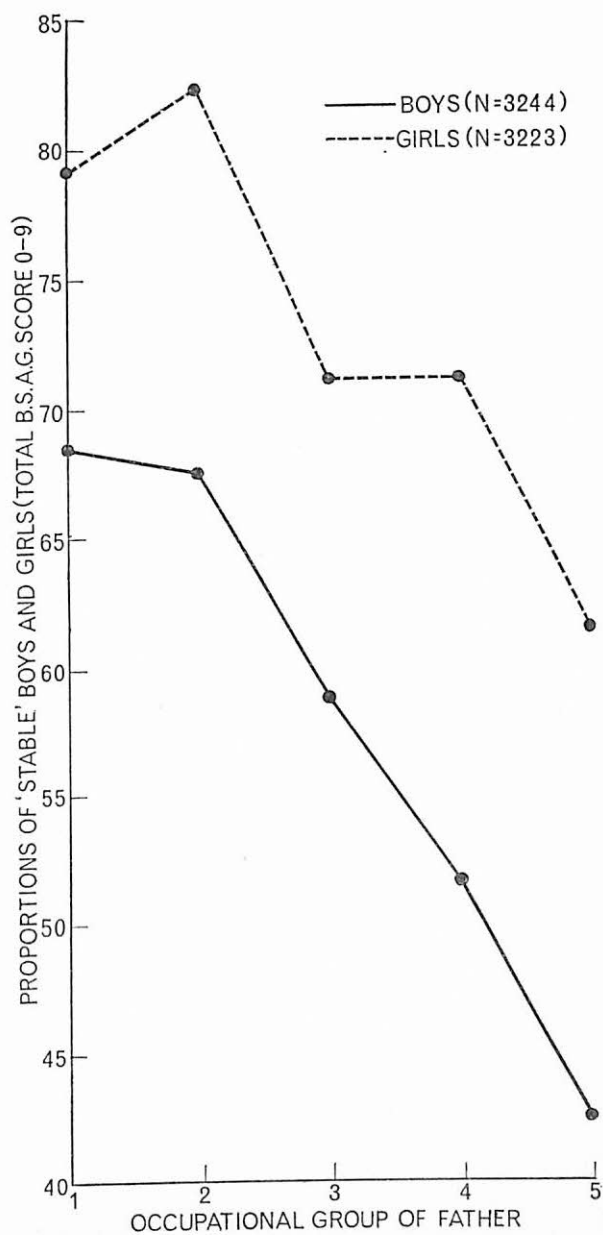
Chi-squared (Trend) = 32.8;  $p < 0.001$

Chi-squared (Departure) = 11.6 (3 d.f.);  $0.01 > p > 0.001$

However, in any study of complex variables, the most straightforward relationships have first to be examined so that allowance can be made for these in subsequent analyses. In view of the marked difference between

**Figure 8.** Social adjustment and Occupational Group of father

N = 6467



the sexes in adjustment, as assessed by the total score on the Social-Adjustment Guides (see Section V G) it was decided to study the association between adjustment and Occupational Group separately for boys and girls.

The children were divided for the purpose of this analysis into two groups on the basis of their scores on the Guides: those with a score of 0 to 9 ('stable'), and those with a score of 10 or more ('unsettled and mal-adjusted').

In Tables 77 and 78 the results are given in percentage form for all children in the present sample in any category of school for whom all the appropriate information was available. In Tables A14 and A15 of Appendix 1, the actual numbers of children are detailed.

It will be seen in both tables and in Figure 8 that the proportion of 'stable' children shows a tendency to fall from Occupational Group 1 to Occupational Group 5. In both cases the statistical tests are highly significant, indicating that for both boys and girls of this age there is an overall tendency for adjustment in school to be poorer in children from homes of lower socio-economic status.

However, there was an interesting difference between the results for the two sexes. In the case of boys of this age there is strong evidence for a decrease in 'stable' behaviour the lower the status of the paternal Occupational Group and no evidence that this 'decline' is not consistent through the Occupational Groups. For girls of this age there is the same evidence of a decrease in 'stable' behaviour through the Occupational Groups, but there is also evidence that the 'drop' from one Occupational Group to another is not uniform.

It will be seen in Table 78 and Figure 8 that the proportion of 'stable' girls in Occupational Group 2 in this particular sub-sample was higher than that in Occupational Group 1. In Occupational Group 3 the proportion dropped considerably, but there was virtually no difference between the picture there and in Occupational Group 4. There was then another drop to Occupational Group 5.

In the absence of further statistical analysis no conclusions can be drawn about the patterns of results in this sub-sample. The fact that there were more 'stable' girls in Occupational Group 2 than Occupational Group 1 is unexpected and may be due to chance fluctuations.

What does emerge from the analyses of the total scores from the Bristol Social-Adjustment Guides is, first, that girls at the age of 7 are markedly better adjusted in school than boys (see Section V G). Secondly, for both sexes there is a strong tendency for the least well adjusted children to be in lower socio-economic groups. Thirdly, it appears that for boys the relationship between socio-economic factors and adjustment in school

is consistent, whereas for girls the relationship is not uniform and appears to be more complex.

It is highly likely that socio-economic factors, as assessed by the Occupational Group of the father, are related to children's adjustment in school because these factors are themselves associated with other circumstances in the social and physical environment of the family and neighbourhood; and also with the physical and mental health of the parents. A more detailed analysis of some of these circumstances in relation to children's adjustment is planned.

## **VII. First findings : summary and discussion**

### **A. Educational, behavioural and social aspects**

#### **I. INTRODUCTION**

Undoubtedly there were many disadvantages in having to produce an early report, not least of which lay in the need to hedge conclusions around with repeated reminders of the preliminary and incomplete nature of both the sample and the analysis. However, there accrued at least one advantage.

In the past, the delay between the completion of studies, especially large scale ones, and their findings being published has tended to be very long. This enables practitioners and administrators to assert that events may have in the meantime brought about such changes that the need for action has been lessened if not eliminated; or that a new investigation would have to be mounted to take account of changed conditions – thus postponing action.

In the case of the National Child Development Study, the first findings presented in this report have become available eighteen months from the beginning of the project and about 12 months after the data on the children began to be collected. Thus the information is so recent in origin that even in a period of comparatively rapid social and educational change the findings describe the situation as it actually is at present.

In recent years there has been increasing interest in the complexity of all the influences which affect children's development and research techniques have grown more subtle, more comprehensive and more rigorous. 'The time has certainly come for some co-operative scheme of research into the innumerable questions that arise. A single investigator can do little, except make a few limited and tentative experiments, and sketch what appear to be the most valid methods of inquiry. The teacher, the medical officer, the social worker, the psychologist, the statistician – all need to lend their expert knowledge'. These prophetic words are from Burt's (1937) classic survey which has never been paralleled, in this

country or anywhere else. Yet 27 years later, Wiseman (1964), discussing the relationship between environment and educational progress, has to state that 'research is still largely a matter of preliminary survey and exploration, seeking new insights to form the bases of more productive hypotheses. We know very little about the mechanisms underlying the variations of a multitude of environmental factors: with no firm grasp of these, too many research workers attack a small and ill-defined sector of the field, armed with little but a hunch or a prejudice, and using whatever variables may come conveniently to hand'.

The National Child Development Study has taken account of both Burt's and Wiseman's strictures: conceived as an inter-disciplinary project, it is sponsored jointly by four bodies; financed by a number of government departments; it depends on the co-operation, indeed active collaboration, of all local authorities in England, Scotland and Wales which was granted to a most generous extent; and the composition of the research team itself is also multi-disciplinary. Moreover, hypotheses were formulated before any of the material was available for analysis.

The Study has also largely overcome another common difficulty, that of sampling. It is well known that there are strong regional differences because various parts of the country differ widely economically, culturally and socially (Floud, Halsey and Martin, 1957; Derrick, 1961); and one study (Ferreze, 1961) suggests that – at least in France – 'geographical factors are even more important than the social ones'. Fortunately, sufficient financial support was given to this study to make it possible to follow-up the entire cohort. It could, of course, be argued that there may still be some sampling bias since all the children were born in one week in March; they could conceivably have certain characteristics which differentiate them from children born in any one or all of the remaining 51 weeks of 1958. Whether and to what extent this is the case will have to await the time when the formidable financial and organisational difficulties involved in mounting more than one national perinatal mortality survey in any one year have been overcome.

The fact that inter-disciplinary research is still largely in an early, almost preliminary, phase means that one of the main productive results of large-scale studies such as ours is the posing of questions to form the stimuli for further investigations. In particular, there are two kinds of study which should follow from it: first, surveys comparable in scope and methodology should be mounted every 10 years or so; this would make possible the observation on a national scale of changes in child development in relation to changes in the economic, social, medical and educational sphere. Secondly, such large-scale studies should prepare the way

for smaller but much more detailed and intensive enquiries into individual differences in the development of children's personality, mental and physical growth, health and educational progress. In fact, plans for both these types of investigation have already been prepared (together with financial estimates) and it must now be hoped that the necessary funds will become available.

## 2. OVER-VIEW

This First Report had two aims: the first and main aim was to give as detailed a picture as possible of a large national sample of 7-year-old boys and girls. This is presented in Section IV: 'Descriptive Statistics'. Of course, data of this kind are normative and no value judgements are made as to what is desirable or undesirable but attention is focused on what is taking place. When the material for the total sample has been analysed, the picture will then become more reliable and meaningful. The second aim was to make at least a beginning with the much more complex task of unravelling the influence of and relationship between a wide range of factors (including pre- and postnatal conditions) and children's physical and psychological development, educational progress, adjustment and behaviour at home and school.

What, then, are the more salient findings thus far?

### (a) *Settling at school*

It would seem that the majority of children settle down within the first month of starting school. However, a sizeable proportion (some 25 per cent) remain unsettled up to 3 months or longer; there is a very significant difference between the sexes, boys taking longer to settle down than girls. The results indicate that the schools of about one-third of the children use some form of introductory attendance prior to the commencement of full-time schooling. Our data do not readily lend themselves to an exploration of the extent to which such schemes have any effect in shortening the subsequent settling-down process; but at least theoretically one would expect this to be the case.

### (b) *Parental interest*

The parents' interest in their children's education, and their contact with the school was assessed in three ways: first, teachers' ratings of parental interest; these indicated that parents showing little or no interest are in a minority (some 16 per cent), there being no difference between mothers and fathers in this respect. Secondly, teachers were asked whether during the current school year parents had taken the initiative in discussing their child with a member of the staff; a rather high proportion had not

done so (43 per cent); when this question was explored in relation to fathers' Occupational Group, it was found that the higher the socio-economic status the greater the proportion of parents who had spontaneously sought an opportunity to discuss their child with a member of staff. Thirdly, asked whether they would wish their child to remain at school beyond the minimum school leaving age, the great majority of mothers replied in the affirmative (over 80 per cent).

Of course, these three criteria are not only rather broad and crude but also involve different degrees of subjectivity. But it looks as if the parents of about half the sample showed an active interest and involvement in their child's schooling, while a minority appear to be lacking such interest.

A first exploration of the relationship between one of the indices of parental interest in the child's education and tested attainment in reading showed there to be a significant association: the proportion of good readers was higher among those children whose parents had themselves initiated some contact with the school and this was true for boys and girls separately. Then the relationship was examined between parental interest and reading attainment within each of the five Occupational Groups separately; the same association was found within Occupational Groups for boys in Occupational Groups 1, 3 and 4, and for girls in Occupational Groups 1 and 3.

### *(c) Educational attainment*

Even at the early age of 7 years, girls were found to be significantly better at reading than boys; this held true whether the yardstick was an objective test or the level of the reading book the child was able to manage or the teacher's judgement of the child's reading ability. When this was examined in relation to socio-economic level — assessed in terms of the Occupational Group of the children's fathers — there was a highly significant difference in the direction predicted on the evidence of previous studies: the lower the occupational status of the fathers, the poorer the reading attainment of the children.

Though the children in this study are all the same age, they have experienced varying length of schooling because administrative arrangements for starting school differ in different parts of the country. This provided an opportunity to compare those who had been admitted to infant schools before the age of 5 ('early starters') with those whose attendance commenced after their 5th birthday ('late starters'). Looking at the reading attainment of these two groups, a significant difference in favour of the 'early starters' was found, even though for the majority the difference in length of schooling had only been one term. This difference

between 'early' and 'late' starters was found to be independent of Occupational Group.

One other environmental variable was explored in relation to reading attainment, namely, whether the child lived with both his natural parents or not, the former being referred to as the 'normal' and the latter as the 'atypical' family situation. The 'atypical' situation included not only 'one-parent' families but also children who had one step-parent or who were adopted, fostered or in residential care. It was found that reading attainment was significantly lower for those whose family situation was 'atypical' and this was equally true for boys and girls. When the same question was examined in relation to socio-economic status, a rather more complex pattern emerged: for the higher Occupational Groups (1, 2 and 3) the result was the same, reading attainment being higher for children living with both their natural parents; but in Occupational Groups 4 and 5, the proportion of poor readers did not differ whether the children had a 'normal' or 'atypical' family background.

Now to turn to attainment in arithmetic. Here boys were found to be superior to girls on a test of problem arithmetic. Again, there was a relationship between attainment in this subject and paternal Occupational Group; the lower the latter, the lower the children's score on the test. Length of schooling was also significantly associated; higher arithmetic scores were attained by 'early' than 'late' starters. When fathers' socio-economic status was taken into account, the same relationship between starting school 'early' and good arithmetic attainment was found to exist independent of Occupational Group.

The few researches that have considered the differences between reading and arithmetic in their response to environmental effects have produced somewhat conflicting results; some showed that reading is more prone to this than is arithmetic (Thorndike, 1951; Burt, 1955; Davis and Kent, 1955; Lynn, 1958), while others do not find this to be the case (Wiseman, 1952; Kemp, 1955). At this stage there has been no analysis of possible differential effects; the present results do, however, indicate that at the age of 7 both reading and arithmetic are related to environmental aspects. Further, an 'early' start in the Infant School is associated with higher attainment in both subjects some 2 years later irrespective of parental socio-economic status.

Three other, more general abilities were explored by means of teachers' ratings. For both 'oral ability' and 'creativity' girls were rated higher by their teachers than boys while the position was reversed regarding 'awareness of the world around'. At this stage time did not permit any more detailed examination of these abilities or their relationship to other variables.

*(d) Behaviour and adjustment*

These were assessed in two ways: by asking mothers about the behaviour and developmental difficulties of their children; and by obtaining information from teachers by means of the Bristol Social-Adjustment Guides, which were completed for each child. So far only some preliminary analysis of this material has been possible.

For most aspects of behaviour, there was evidence that a greater proportion of boys, as reported by their mothers, show difficulties at home. However, there are some exceptions; for example, more girls than boys suck their thumb or fingers during the day and bite their nails. The differences between the sexes appeared to be most marked for aggressive types of behaviour. It is worth noting that a sizeable proportion of 7-year-olds are reported to be faddy over food; and to throw the occasional temper tantrum (a little under 30 per cent in each case). In these two aspects of behaviour there were no significant differences between boys and girls. However, more boys are reluctant to go to school than girls.

Deviations from normal behaviour which many clinicians would consider as likely indications of some degree of emotional disturbance occurred only among a small minority. Thus, between 7 and 8 per cent of children were reported to show the following behaviour frequently: difficulty in settling to anything for more than a few moments; destroying their belongings or those of others; frequently disobeying parents; being upset by new situations; and bodily twitches or mannerisms. In this context it is interesting to recall a recent study by Glueck (1966) dealing with the 'Identification of potential delinquents at 2-3 years of age'. The three behavioural traits which, when manifested at an early age, markedly distinguished later delinquents from non-delinquents were 'extreme restlessness, destructiveness and non-submissiveness to parental authority'. Thus those traits are considered by Glueck to have high predictive value, not only for distinguishing future delinquents but also for diagnosing maladjusted or 'malfunctioning' children.

When the children's behaviour in school was assessed by means of the Bristol Social-Adjustment Guides, there was again a highly significant difference between the sexes: the proportion of boys being rated as 'maladjusted' was twice as great as that of the girls; the converse was also true, namely, significantly more girls were being rated as 'stable' than boys. At a later stage qualitative differences in the type of deviant behaviour shown by boys and girls respectively, will be explored. However, using the criterion of the Guides, it looks as if about 13 per cent of 7-year-olds show behaviour indicative of 'maladjustment'.

When adjustment was examined in relation to socio-economic status, it was found that the proportion of 'stable' children decreased the lower

the Occupational Group of the fathers. Though this was the case for both sexes, the 'decline' from one Occupational Group to the next was uniform for boys but not for girls.

'Social-adjustment' was then examined in relation to length of schooling. A significant difference was found between 'early' and 'late' starters, the latter showing more indications of poor adjustment than the former. This relationship between 'early starting' and better adjustment was also found to hold independent of Occupational Group.

*(e) Need for special provision*

This term is used here in the widest sense to include facilities within and outside the ordinary school, as well as provision for all kinds of difficulties, be they educational, emotional or physical.

First, to consider backwardness in reading. There is some evidence from our results that there has been a decrease in the proportion of poor readers during the past 10 years (Morris, 1959). Nevertheless, a considerable number of children in this sample of 7-year-olds were described by their teachers as being either non-readers (about 3 per cent) or poor readers (about 24 per cent). An even larger proportion (almost half the sample) had not achieved a sufficient mastery of this subject near the end of their infant schooling to use it as an efficient tool for further learning; rather, reading must continue to be specifically taught, because full mastery of the skill has not yet been attained. Thus, on the evidence of the children's present reading abilities about a quarter will need a continuation of 'infant methods' if they are to progress with this basic subject; moreover, a proportion of them will probably be unable to succeed unless given general educational help of one kind or another, not merely help with reading.

To ascertain the likely size of this group, teachers were asked two questions: how many of the children were at present receiving special help because of educational or mental backwardness and how many would benefit from such help if it were available. The answer to the first question was 5 per cent and to the second question 8 per cent; in each case the proportion of boys being significantly greater than that of the girls. Thus, in the teachers' judgement some 13 per cent of the children would derive benefit from educational help additional to what could be provided by class teachers themselves.

With regard to special educational help, including special schooling, teachers were of the opinion that within the next 2 years this would be a likely requirement for some 5 per cent; this was in addition to the half per cent already attending special schools. However, for a number of reasons, this figure of 5 per cent is likely to be an underestimate.

One other direct method was used to arrive at some estimate of the need for special provision; this was by finding out from teachers how many children had been referred to outside agencies because of behaviour difficulties or lack of progress. The figure reported, 9.5 per cent, is again likely to be an underestimate: some children will have been referred to an outside agency unbeknown to their teachers; and, perhaps much more important, a lack of diagnostic and treatment facilities has a curtailing effect on the number of referrals. Such a lack exists in many areas with a consequent shortage of places in special schools and long waiting lists for an examination in school psychological services and child guidance clinics, where these exist. Conversely, it is a well known phenomenon that if a new special school or child guidance clinic is opened, there is a steep rise in the number of referrals.

Lastly, there is one indirect way of trying to assess the need for psychological consultation and possibly treatment. The extent of the development and behaviour difficulties reported by the mothers and the proportion of children assessed on the Social-Adjustment Guides to be 'maladjusted' at school, would indicate that a minimum of 5 per cent have quite serious adjustment problems, while at least a further 10 per cent show stress symptoms of various kinds.

Only further analysis will provide evidence on the degree of overlap between educational and emotional problems as well as on their relation to the whole range of physical handicaps. What seems already beyond doubt is the fact that there is a need for special provision during the second year in the infant school if educational and emotional problems are to be dealt with as soon as they are recognised by teachers and parents.

### 3. SOME POINTERS TO POLICY AND PRACTICE

Starting school presents for most children a major step forward in independence but also a major departure from their previous pattern of life. Might not a more widespread adoption by infant schools of the practice of 'introductory attendance' both ease and speed up the process of settling down?

It is now widely recognised, that parental interest in the child's education plays a vital part in satisfactory progress. Are not infant schools the most natural and logical starting point for fostering such interest on a much wider scale? This would involve giving some priority to them in terms of staff and money. Perhaps increasing responsibility for enlisting parental interest should also be undertaken by school welfare officers and health visitors? Or should teachers who have taken one of the newly established courses for joint social work/teacher training be

encouraged to work in infant schools? Could voluntary workers include in their service to the community the task of freeing parents of large families to visit their children's school by looking after those who remain at home?

'Early starters' have higher attainment and better adjustment than children who start school about a term later. Perhaps this advantage is comparatively short-term; only subsequent examinations of the same children will tell. But if the advantages turn out to be long-term, should attempts be made to ensure an earlier start, especially for the culturally and socially underprivileged?

Low socio-economic status is associated, even by the age of 7 with low educational attainment and high 'maladjustment'. If 'equal educational opportunity' is to become a reality, ought not pre-school education, specially geared to the needs of culturally deprived children, to be given high priority?

The well-known pattern of boys being more backward in reading and showing a higher incidence of behaviour difficulties, was found to exist already by the age of 7 years. Is there a continuum of vulnerability stretching right back to prenatal and perinatal days? If later work does establish such a link, would boys' greater vulnerability indicate a need for differential child-rearing and educational practices? Or is their relatively inferior performance a result of current child-rearing and educational practices? For example, could it be related to the fact that it is largely women who care for and educate boys during the early years? Would more male teachers in infant schools have a beneficial result on boys' educational progress and adjustment?

About 45 per cent of children appear not to reach full mastery of reading skills by the time they are due to leave infant schools. This means that the teaching of reading needs to be continued at the junior level; also there should be some continuity in teaching methods and reading schemes. This clearly has implications for both policy and practice. Is the present age of transfer the most appropriate? Must there be a uniform transfer age? Is there effective practical recognition, both in teacher training and in appointing junior school staff, of the need for infant school reading methods beyond the age of 7?

The proportion of educationally backward and emotionally mal-adjusted children appears to be high enough by the second year in the infant school to warrant greatly increased provision for their needs. Such early provision, including diagnosis and treatment of various kinds, would be in line with the increasing emphasis which is being placed on early detection and prevention. The focus of such early preventive work should be on socially and culturally underprivileged children, especially

boys, since by the age of 7 their needs are clearly the greatest, at least numerically. Hitherto, a much greater proportion of children from the higher socio-economic groups find their way into child guidance clinics while a much higher proportion of boys from the lower socio-economic groups eventually appear in Juvenile Courts. Of course, poverty, broken or disrupted family life, housing difficulties, especially of large families, all contribute to this pattern of backwardness and maladjustment. At the same time, early remedial and psychological treatment has much to offer, particularly if it could be part of a more comprehensive scheme for family-centred, preventive and rehabilitative work. What kind of diagnostic and treatment centres would be most appropriate for dealing with those in greatest need? How can parental co-operation be obtained? And is it essential? What should be the relationship between preventive, social, educational and psychological services? Need there be better integration of policies, services and practices?

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## B. Physical and medical aspects

### 1. SCOPE AND VALUE OF THE PRELIMINARY ANALYSIS

New methods of surveillance and investigation of schoolchildren's health should be constantly evolving. Easier adaptation to changing circumstances occurs where a large national cohort is used to monitor the proportion of children requiring treatment for physical ill health. Where this reveals previously undetected or untreated cases, action is indicated—either towards *prevention* through health education or towards *earlier diagnosis* of major and minor handicaps by more screening tests and increased surveillance from infancy onwards.

Follow-up of such a national group of children throughout their childhood can also throw some light upon new ways of establishing an optimum procedure for assessing health and growth. As no interim study of the children had been undertaken since birth, the 7-year-old follow-up included a detailed developmental and medical history as well as a full physical and medical examination. This must not, of course, be taken to imply that a complete medical history and examination is felt to be ideal, or even practicable, as a routine procedure for British schoolchildren at 7 years of age. Procedures at this age might include selective screening tests; a questionnaire or personal enquiry of parents and teachers; or a medical examination of vulnerable groups. Emphasis on high-risk children is typical of a growing number of school health services.

The present preliminary results indicate a need for increased medical staff trained in child development; closer contact between parents and educational and school health services; more screening procedures; and added efficiency in early diagnostic procedures to 'identify' major and minor handicaps in pre-school and infant school children.

Pre-school records of the present sample show that only in infancy was observation optimal for early diagnosis. Over 80 per cent had attended infant welfare clinics. Between 1 and 5 years considerably fewer (38 per cent) had been taken to a pre-school or toddler clinic; an unknown number would have been seen by their general practitioner.

No attempt has been made on this incomplete sample to examine the nature of previously undiagnosed disabilities. At a later stage it is hoped to investigate these cases as well as the age at diagnosis of known handi-

caps and the educational and medical facilities provided. However, it is doubtful whether even a follow-up of more than 15,000 children will yield a sufficient number of major handicaps to evaluate the efficacy of 'treatment' for separate conditions. Interest in the handicapped children will centre mainly on their perinatal correlates.

The present report covers mainly the field of minor disabilities and deviations and the assessment and testing of special senses. In many spheres the results may be seen as an adjunct to the statistics assembled in the reports of local authority school health services and summarised in the biennial reports of the Chief Medical Officer of the Department of Education and Science. The results are more valuable where national figures are otherwise unavailable and also where gross regional or local variations in reported incidences indicate ambiguities of definition or interpretation.

The present report, though to be regarded as provisional, nevertheless does demonstrate the feasibility of gathering national data on the health of children through the school health services. By using a standard format and modern data-processing techniques, it has been possible to present interim results in a very short period.

The pre-coded answers both for the history obtained from the mother and for the medical examination covered relevant aspects of every system which could readily be reproduced. The medical examinations were carried out without special apparatus or conditions by school medical officers. The information gathered was more comprehensive than would normally be considered necessary or possible at routine examinations but regular shortened enquiries, pre-coded and rapidly data-processed, would allow decisions to be taken from a consideration of results while still current. The present study, then, may in part be of value as a pilot for a national system of recording and retrieving data on the health of school children.

## 2. DESCRIPTIVE STATISTICS

Information was obtained on *past development and illnesses*. This was retrospective as the children were not followed between birth and 7 years. For this report careful selection was made in view of its potential unreliability. Most of such data are used only in sex comparisons. However, the retrospective data were gathered very much as any routine medical history. Data in Appendix I allow the reader to calculate past incidences if he wishes. He may be surprised at the reported frequency of certain conditions of which a history is often considered abnormal. One such condition is nocturnal enuresis; about one in nine of the children were reported as being wet by night more than occasionally

between 5 and 7 years. A much smaller proportion (4.4 per cent) had daytime incontinence after 3 years and only 1.2 per cent were reported to have soiled by day after 4 years.

Much is written currently on the ill-effect of periods of separation due to hospital admission and the present policy is moving towards unrestricted visiting of children in hospital. The wide importance of this subject is shown by the high proportion of children who had been admitted to hospital by 7 years of age for various conditions. Any effect on social adjustment will be investigated later. Strikingly high among causes for admission were accidents and other injuries both at home and elsewhere. This underlines the need for better education in accident prevention.

*Sex differences* in Section V E ('Medical and Developmental Sex Comparisons') confirm for many morbidity factors what is already known for perinatal, infant and childhood mortality, namely the greater vulnerability of boys. For example, boys attended more often at child guidance clinics and speech clinics and showed more facial tics, stammers and other speech defects, as well as being more accident-prone and, historically, later in developmental 'milestones' including walking, talking, and bladder control.

*Disorders of special function* such as hearing, vision and speech are among the most important educational considerations at the age of 7. Section V C, therefore, summarises the results of investigations into these functions. The extent to which defects of hearing and speech had impinged upon parental consciousness was indicated by a past history of hearing difficulty in 10 per cent and some speech abnormality in 16 per cent. The work load carried by the corresponding medical services was considerable, though it could only be estimated retrospectively. Apart from school visual or auditory tests, 12 per cent of mothers reported that the children had attended for special visual examination and 8 per cent at hearing or audiology clinics.

The strain placed upon the *childhood dental services* was underlined by the fact that three quarters of the children were reported as having already come under the school or general dental services by 7 years of age. Many would feel, however, that *all* children should have dental assessment and the importance of this is emphasised by the fact that one in five were found on examination to have a minimum of eight or more decayed, missing or filled teeth.

Minor *visual impairment* was also reported to be quite frequent. Approximately one in seven of the children was assessed by the medical examiners to have a visual defect, but only 0.3 per cent was judged as handicapped for normal schooling and everyday activities; some 6

per cent of the sample were found on examination to have a squint (manifest or latent); over 5 per cent had uncorrected visual acuity of 6/12th or less in the right eye, and a similar proportion in the left eye. And what of treatment? Six per cent of children wore or had already required glasses, 25 per cent of whom had corrected vision of 6/12ths or less in one or other eye. Should more children be regarded as potentially visually handicapped and put near the front of the class?

About 5 per cent of 7 year olds were judged by the medical examiners to have a minor degree of *hearing impairment*. Analysis of the clinical hearing test of these children and of their audiograms should throw further light upon this.

Speech difficulties clearly gave concern to parents. One in six of the children were reported as having had current or past stammer or stutter (6.2 per cent) or other speech difficulty (10 per cent). Over 2 per cent had received speech therapy by the age of 7. A stammer or stutter was observed on examination in about 1 per cent. In a rating of the children's speech intelligibility by the medical examiners (Table A40; Appendix 1), about 14 per cent were judged to be not fully intelligible, but only 1.4 per cent were assessed as having a moderate or severe impairment of speech.

At the present stage, time has permitted the analysis and presentation of only a part of the medical information which has been gathered. In addition, some results have been withheld until data on the 'late returns' can be processed because of particular danger of bias or misleading conclusions. In a later report it is intended not only to fill these gaps but also to examine the correlations between current medical, physical, educational, psychological and social factors and also, of course, to utilise the very comprehensive perinatal data in an investigation of the relationship between factors at or before birth and subsequent health and development.

## Appendix 1—Tables

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- A3 Teachers' Ratings of Reading Ability.
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**Table A1.** Southgate Reading Test scores

Reading scores	N	Per cent
0 - 3	69	0.7
4 - 6	211	2.0
7 - 9	462	4.4
10-12	546	5.2
13-15	624	5.9
16-18	690	6.6
19-21	874	8.3
22-24	1118	10.7
25-27	1761	16.8
28-30	4133	39.4
Total tested	10488	100
No data	108	
GRAND TOTAL	10596	

**Table A2.** Problem Arithmetic Test scores

Arithmetic scores	N	Per cent
0	230	2.2
1	486	4.6
2	998	9.5
3	1317	12.6
4	1480	14.1
5	1493	14.2
6	1375	13.1
7	1153	11.0
8	919	8.8
9	641	6.1
10	388	3.7
Total tested	10480	100
No data	116	
GRAND TOTAL	10596	

**Table A3.** Teachers' ratings of reading ability.

Descriptions of Ratings	N	Per cent
Avid reader. Reads fluently and widely in relation to his age	710	6.6
Above average ability. Comprehends well what he reads	2569	23.8
Average reader	4685	43.3
Poor reader. Limited comprehension	2539	23.5
Non-reader, or recognises very few words	305	2.8
Total tested	10808	100
No data	25	
GRAND TOTAL	10833	

**Table A4 (a).** Developmental difficulties occurring over a 3-month period (Mother's report)

(All boys)

N=4058

Developmental difficulties	Yes	No	Don't know	No data
Has complained of headaches (more than once)	796	3125	32	5
Has had temper tantrum	1200	2827	29	2
Has been reluctant to go to school	493	3532	29	4
Has had bad dreams or night terrors	689	3329	39	1
Has had difficulty in getting off to sleep	728	3304	23	3
Has sleepwalked	124	3914	17	3
Has been faddy – many dislikes over food	1124	2916	17	1
Has had poor appetite	618	3401	37	2
Has over-eaten for more than the occasional meal	285	3744	27	2

**Table A4(b).** Developmental difficulties occurring over a 3-month period (Mother's report)

(All girls)

N=3927

Developmental difficulties	Yes	No	Don't know	No data
Has complained of headaches (more than once)	800	3027	97	3
Has had temper tantrum	1058	2847	19	3
Has been reluctant to go to school	376	3528	22	1
Has had bad dreams or night terrors	625	3256	44	2
Has had difficulty in getting off to sleep	788	3117	21	1
Has sleepwalked	134	3771	17	5
Has been faddy – many dislikes over food	1187	2722	16	2
Has had poor appetite	688	3208	28	3
Has over-eaten for more than the occasional meal	235	3675	16	1

**Table A5.** Aspects of children's behaviour (Mother's report)

Behavioural descriptions	Boys N=4058	Girls N=3927	TOTAL N=7985
Has difficulty in settling to anything for more than a few moments			
Frequently	340	236	576
Sometimes	1053	858	1911
Never	2646	2817	5463
Don't know	18	15	33
No data	1	1	2
Prefers to do things on his/her own rather than with others			
Frequently	920	850	1770
Sometimes	1843	1734	3577
Never	1249	1292	2541
Don't know	38	46	84
No data	8	5	13
Is bullied by other children			
Frequently	211	170	381
Sometimes	1295	1075	2370
Never	2481	2618	5099
Don't know	69	60	129
No data	2	4	6
Destroys own or others' belongings (e.g. tears or breaks)			
Frequently	175	61	236
Sometimes	654	330	984
Never	3212	3521	6733
Don't know	13	13	26
No data	4	2	6
Is miserable or tearful			
Frequently	178	188	366
Sometimes	1488	1646	3134
Never	2380	2080	4460
Don't know	9	6	15
No data	3	7	10

**Table A5** (*Continued*)

Behavioural descriptions	Boys N = 4058	Girls N = 3927	TOTAL N = 7985
Is squirmy or fidgety			
Frequently	520	404	924
Sometimes	1349	1227	2576
Never	2176	2278	4454
Don't know	11	15	26
No data	2	3	5
Worries about many things			
Frequently	459	475	934
Sometimes	1437	1439	2876
Never	2098	1960	4058
Don't know	60	50	110
No data	4	3	7
Is irritable, quick to fly off the handle			
Frequently	480	426	906
Sometimes	1536	1408	2944
Never	2023	2079	4102
Don't know	13	11	24
No data	6	3	9
Sucks thumb or finger during day			
Frequently	195	311	506
Sometimes	219	325	544
Never	3631	3277	6908
Don't know	9	11	20
No data	4	3	7
Is upset by new situation, by things happening for first time			
Frequently	232	204	436
Sometimes	898	966	1864
Never	2881	2716	5597
Don't know	43	35	78
No data	4	6	10

**Table A5** (*Continued*)

Behavioural descriptions	Boys N=4058	Girls N=3927	TOTAL N=7985
Has twitches or mannerisms of the face, eyes or body			
Frequently	103	59	162
Sometimes	261	188	449
Never	2673	3665	7338
Don't know	16	9	25
No data	5	6	11
Fights with other children			
Frequently	312	111	423
Sometimes	2473	1596	4069
Never	1242	2183	3425
Don't know	24	31	55
No data	7	6	13
Bites nails			
Frequently	425	493	918
Sometimes	484	630	1114
Never	3135	2789	5924
Don't know	11	10	21
No data	3	5	8
Is disobedient at home			
Frequently	188	133	321
Sometimes	2428	2064	4492
Never	1433	1718	3151
Don't know	8	8	16
No data	1	4	5

**Table A6.** Southgate Test score and Occupational Group of the father

Reading groups	Occupational Group					TOTAL
	1	2	3	4	5	
'Good readers' (Score 28-30)	772	408	1156	361	88	2785
'Poor and medium readers' (Score < 28)	602	335	2026	797	289	4049
TOTAL	1374	743	3182	1158	377	6834

**Table A7.** Problem Arithmetic Test score and Occupational Group of the father

Arithmetic groups	Occupational Groups					TOTAL
	1	2	3	4	5	
'Good arithmetical ability' (Score 8-10)	386	163	505	168	53	1275
'Medium and poor arithmetical ability' (Score 0-7)	988	581	2666	992	322	5549
TOTAL	1374	744	3171	1160	375	6824

**Table A8.** Length of schooling and Southgate Reading Test score

Ages of commencing school	Southgate Reading Test score			TOTAL
	'Good readers' (Score 28-30)	'Medium readers' (Score 16-27)	'Poor readers' (Score 0-15)	
'Early starters' (4 years 6 months to 4 years 11 months)	1199	1199	364	2762
'Late starters' (5 years to 5 years 6 months)	901	1084	504	2489
TOTAL	2100	2283	868	5251

**Table Ag.** Occupational Group of the father, length of schooling and Southgate Reading Test score

Occupational Groups	Ages of commencing school	Southgate Reading Test score		TOTAL
		'Good readers' (Score 28-30)	'Medium and poor readers' (Score 0-27)	
1	'Early starters' 4 years 6 months to 4 years 11 months	301	218	519
	'Late starters' 5 years to 5 years 5 months	223	244	467
2	'Early starters' 4 years 6 months to 4 years 11 months	185	114	299
	'Late starters' 5 years to 5 years 5 months	146	139	285
3	'Early starters' 4 years 6 months to 4 years 11 months	518	803	1321
	'Late starters' 5 years to 5 years 5 months	374	770	1144
4	'Early starters' 4 years 6 months to 4 years 11 months	157	318	475
	'Late starters' 5 years to 5 years 5 months	122	311	433
5	'Early starters' 4 years 6 months to 4 years 11 months	38	110	148
	'Late starters' 5 years to 5 years 5 months	36	124	160
TOTAL		2100	3151	5251

**Table A10.** Length of schooling and Problem Arithmetic Test score

Ages of commencing school	Problem Arithmetic Test score			TOTAL
	'Good arithmetical ability' (Score 8-10)	'Medium arithmetical ability' (Score 3-7)	'Poor arithmetical ability' (Score 0-2)	
'Early starters' (4 years 6 months to 4 years 11 months)	549	1826	380	2755
'Late starters' (5 years to 5 years 5 months)	401	1643	443	2487
TOTAL	950	3469	823	5242

**Table AII.** Occupational Group of the father, length of schooling and Problem Arithmetic Test score

Occupational Groups	Age of commencing school	Problem Arithmetic Test score		TOTAL
		'Good arithmetical ability' (Score 8-10)	'Medium and poor arithmetical ability' (Score 0-7)	
1	'Early starters' 4 years 6 months to 4 years 11 months	146	373	518
	'Late starters' 5 years to 5 years 5 months	106	361	467
2	'Early starters' 4 years 6 months to 4 years 11 months	74	225	299
	'Late starters' 5 years to 5 years 5 months	60	226	286
3	'Early starters' 4 years 6 months to 4 years 11 months	232	1085	1317
	'Late starters' 5 years to 5 years 5 months	159	981	1140
4	'Early starters' 4 years 6 months to 4 years 11 months	72	403	475
	'Late starters' 5 years to 5 years 5 months	59	375	434
5	'Early starters' 4 years 6 months to 4 years 11 months	25	121	146
	'Late starters' 5 years to 5 years 5 months	17	143	160
TOTAL		950	4292	5242

**Table A12.** Length of schooling and adjustment in school

Ages of commencing school	Adjustment in school			TOTAL
	'Stable' Total score 0-9	'Unsettled' Total score 10-19	'Maladjusted' Total score 20+	
'Early starters' 4 years 6 months to 4 years 11 months	1818	516	282	2616
'Late starters' 5 years to 5 years 5 months	1494	521	286	2301
TOTAL	3312	1037	568	4917

**Table A13.** Occupation of the father, length of schooling and adjustment in school.

Occupational Groups	Ages of commencing school	Adjustment in school		TOTAL
		'Stable' Total score 0-9	'Unsettled and Maladjusted' Total score 10+	
1	'Early starters' 4 years 6 months to 4 years 11 months	363	121	484
	'Late starters' 5 years to 5 years 5 months	311	117	428
2	'Early starters' 4 years 6 months to 4 years 11 months	221	62	283
	'Late starters' 5 years to 5 years 5 months	202	63	265
3	'Early starters' 4 years 6 months to 4 years 11 months	857	393	1250
	'Late starters' 5 years to 5 years 5 months	678	383	1061
4	'Early starters' 4 years 6 months to 4 years 11 months	297	167	464
	'Late starters' 5 years to 5 years 5 months	234	166	400
5	'Early starters' 4 years 6 months to 4 years 11 months	80	55	135
	'Late starters' 5 years to 5 years 5 months	69	78	147
TOTAL		3312	1605	4917

**Table A14.** Social adjustment and Occupational Group of the father

(Boys)

Social Adjustment Scores	Occupational Groups					TOTAL
	1	2	3	4	5	
'Stable' (Total Score 0-9)	440	231	897	285	76	1929
'Unsettled and Maladjusted' (Total Score 10+)	202	111	630	269	103	1315
TOTAL	642	342	1527	554	179	3244

**Table A15.** Social adjustment and Occupational Group of the father

(Girls)

Social Adjustment Score	Occupational Groups					TOTAL
	1	2	3	4	5	
'Stable' (Total Score 0-9)	513	297	1059	400	107	2376
'Unsettled and Maladjusted' (Total Score 10+)	133	62	426	160	66	847
TOTAL	646	359	1486	560	173	3223

**Table A16.** Respiratory and chest conditions (summary)

	Boys Per cent	Girls Per cent	Chi- squared (1 d.f.)	P Value
<i>Past medical history</i>				
More than 3 throat and/or ear infections (with fever) in the past year	12.8	13.9	2.4	> 0.05 not sig.
Hayfever or sneezing attacks	5.9	5.2	1.7	> 0.05 not sig.
Habitual snoring or mouth breathing	26.0	22.0	17.7	< 0.001
Running ears (i.e. pus, not wax)	8.4	9.5	2.9	> 0.05 not sig.
Earache, without running ears	29.7	33.4	12.6	< 0.001
Hearing difficulty (suspected or confirmed)	10.9	9.5	4.3	0.05 > <i>p</i> > 0.01 not sig.
Attacks of asthma	3.6	2.3	12.7	< 0.001
Bronchitis with wheezing	19.4	15.9	16.4	< 0.001
<i>Summary of findings on examination</i>				
Nasal obstruction	10.2	7.9	12.8	< 0.001
Nasal or post-nasal discharge	10.7	9.0	6.0	0.05 > <i>p</i> > 0.01 not sig.
Enlarged glands in the neck	25.9	22.6	12.1	< 0.001
Signs of past or present middle ear infection	8.6	9.0	0.2	> 0.05 not sig.
Deformity of the external ear	2.3	0.7	36.2	< 0.001
Abnormal chest shape	3.3	1.7	21.4	< 0.001

The numbers on which the above percentages are based are shown in Tables A16a-n

**Table A16a.** History of more than three throat/ear infections in the past year

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	13	4	9
Yes	1063	517	546
No	6900	3532	3368
No data	9	6	3

**Table A16b.** History of hay fever/sneezing attacks

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	18	12	6
Yes	444	239	205
No	7508	3799	3709
No data	15	9	6

**Table A16c.** History of habitual snoring or mouth-breathing

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	38	17	21
Yes	1908	1051	857
No	6022	2984	3038
No data	17	7	10

**Table A16d.** History of running ears

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	14	6	8
Yes	710	339	371
No	7244	3702	3542
No data	17	12	5

**Table A16e.** History of earache without running ears

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	16	9	7
Yes	2505	1200	1305
No	5450	2844	2606
No data	14	6	8

**Table A16f.** History of hearing difficulty (suspected or confirmed)

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	25	16	9
Yes	815	442	373
No	7133	3595	3538
No data	12	6	6

**Table A16g.** History of asthma

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	14	8	6
Yes	236	147	89
No	7721	3899	3822
No data	14	5	9

**Table A16h.** History of bronchitis with wheezing

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	17	8	9
Yes	1405	783	622
No	7554	3262	3292
No data	9	6	3

**Table A16i.** Nasal obstruction on examination

	TOTAL N	Boys N	Girls N
	7971	4054	3917
Don't know	12	8	4
Yes	717	410	307
No	7230	3628	3602
No data	12	8	4

**Table A16j.** Nasal or postnasal discharge on examination

	TOTAL N	Boys N	Girls N
	7971	4054	3917
Don't know	15	9	6
Yes	782	430	352
No	7155	3604	3551
No data	19	11	8

**Table A16k.** Enlarged glands in neck on examination

	TOTAL N	Boys N	Girls N
	7971	4054	3917
Don't know	8	3	5
Yes	1926	1046	880
No	6015	2993	3022
No data	22	12	10

**Table A16l.** Signs of past or present middle ear infection on examination

	TOTAL N	Boys N	Girls N
	7971	4054	3917
Don't know	934	416	518
Yes	614	312	302
No	6373	3304	3069
No data	50	22	28

**Table A16m.** Deformity of external ear on examination

	TOTAL N	Boys N	Girls N
	7971	4054	3917
Don't know	5	4	1
Yes	122	95	27
No	7841	3953	3888
No data	3	2	1

**Table A16n.** Abnormal chest shape on examination

	TOTAL N	Boys N	Girls N
	7971	4054	3917
Don't know	7	4	3
Yes	200	134	66
No	7757	3912	3845
No data	7	4	3

**Table A17.** History of recurrent mouth ulcers

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	303	3746	4049	7.5	7	3
Girls	455	3461	3916	11.6	5	5

Sex difference - Chi-squared = 39.5 (1 d.f.);  $p < 0.001$

**Table A18.** Hernia (Summary)

	Boys Per cent	Girls Per cent	Chi- squared (1 d.f.)	P Value
(a) History of hernia of any sort	3.8	1.9	26.2	$< 0.001$
(b) Admitted to hospital for hernia repair	2.7	1.0	32.2	$< 0.001$
(c) Inguinal hernia on examination	0.8	0.1	18.9	$< 0.001$
(d) Other hernia on examination	0.9	1.2	1.1	$> 0.05$ not sig.

The numbers on which these percentages are based are shown in Tables A18a, c, d

**Table A18a.** History of hernia of any sort

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	11	10	1
Yes	230	155	75
No	7737	3889	3848
No data	7	5	2

**Table A18c.** Inguinal hernia on examination

	TOTAL N	Boys N	Girls N
	7970	4053	3917
Don't know	10	6	4
Yes	37	32	5
No	7920	4014	3906
No data	3	1	2

**Table A18d.** Other hernia on examination

	TOTAL N	Boys N	Girls N
	7970	4053	3917
Don't know	11	6	5
Yes	84	38	46
No	7872	4007	3865
No data	3	2	1

**Table A19.** History of periodic vomiting or bilious attacks

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	Total	Incidence per cent	Don't know	No data
Boys	690	3358	4048	17.0	7	4
Girls	678	3240	3918	17.3	6	2

Sex difference - Chi-squared = 0.1 (1 d.f.);  $p > 0.05$  not significant**Table A20.** History of periodic abdominal pain

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	565	3480	4045	14.0	9	5
Girls	615	3300	3915	15.7	9	2

Sex difference - Chi-squared = 4.8 (1 d.f.);  $0.05 > p > 0.01$  not significant**Table A21.** Neuropsychiatric factors (summary)

		Boys Per cent	Girls Per cent	Chi- squared (1 d.f.)	P Value
(a)	Frequent headaches or migraine	8.2	7.9	0.3	$> 0.05$ not sig.
(b)	Tics or habit	5.9	4.4	8.4	$0.01 > p > 0.001$
(c)	spasms	4.2	3.8	0.9	$> 0.05$ not sig.
(d)	Breath holding, head banging or "rocking"	9.7	7.3	143.0	$< 0.001$
(e)	Travel sickness	18.3	29.2	128.7	$< 0.001$
(f)	Concussion or head in- jury (with unconscious- ness)	3.5	2.6	5.4	$0.05 > p > 0.01$ not sig.

The numbers on which the above percentages are based are shown in  
Tables A21a-f

**Table A21a.** History of frequent headaches or migraine

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	11	4	7
Yes	639	331	308
No	7327	3718	3609
No data	8	6	2

**Table A21b.** History of tics or habit spasms

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	10	3	7
Yes	410	237	173
No	7548	3809	3739
No data	17	10	7

**Table A21c.** Tics or habit spasms on examination

	TOTAL N	Boys N	Girls N
	7970	4053	3917
Don't know	4	1	3
Yes	316	169	147
No	7649	3882	3767
No data	1	1	0

**Table A21d.** History of breath holding, head banging or 'rocking'

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	11	2	9
Yes	680	393	287
No	7281	3656	3625
No data	13	8	5

**Table A21e.** History of travel sickness

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	37	20	17
Yes	1878	739	1139
No	6061	3293	2768
No data	9	7	2

**Table A21f.** History of concussion or head injury

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	10	7	3
Yes	246	143	103
No	7717	3904	3813
No data	12	5	7

**Table A22.** Fits or convulsions in the first year

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	89	3941	4030	2.2	23	6
Girls	61	3846	3907	1.6	15	4

Sex difference - Chi-squared = 4.5 (1 d.f.);  $0.05 > p > 0.01$  not significant**Table A23.** Fits or convulsions after the first year

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	117	3920	4037	2.9	12	10
Girls	88	3828	3916	2.2	7	3

Sex difference - Chi-squared = 3.4 (1 d.f.);  $p > 0.05$  not significant**Table A24.** History of petit mal or blank spells

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	22	4020	4042	0.5	12	5
Girls	30	3888	3918	0.8	6	2

Sex difference - Chi-squared = 1.5 (1 d.f.);  $p > 0.05$  not significant**Table A25.** History of 'port-wine stains'

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	179	3862	4041	4.4	7	11
Girls	251	3661	3912	6.4	6	8

Sex difference - Chi-squared = 15.3 (1 d.f.);  $p < 0.001$

**Table A26.** History of 'strawberry marks'

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	178	3863	4041	4.4	9	9
Girls	211	3692	3903	5.4	9	14

Sex difference - Chi-squared = 4.3 (1 d.f.);  $0.05 > p > 0.01$  not significant**Table A27.** Any birthmark on examination

Number of boys = 4053; Number of girls = 3917; Total = 7970

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	452	3595	4047	11.2	3	3
Girls	539	3372	3911	13.8	3	3

Sex difference - Chi-squared = 12.5 (1 d.f.);  $p < 0.001$ **Table A28.** History of eczema after first year

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	223	3827	4050	5.5	5	4
Girls	225	3692	3917	5.7	6	3

Sex difference - Chi-squared = 0.2 (1 d.f.);  $p > 0.05$  not significant**Table A29.** Eczema on examination

Number of boys = 4053; Number of girls = 3917; Total = 7970

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	114	3934	4048	2.8	2	3
Girls	105	3805	3910	2.7	6	1

Sex difference - Chi-squared = 0.1 (1 d.f.);  $p > 0.05$  not significant

**Table A30.** History of fracture

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	264	3787	4051	6.5	3	5
Girls	225	3695	3920	5.7	1	5

Sex difference - Chi-squared = 2.1 (1 d.f.);  $p > 0.05$  not significant**Table A31.** History of talipes

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	25	4025	4050	0.6	3	6
Girls	44	3876	3920	1.1	2	4

Sex difference - Chi-squared = 5.9 (1 d.f.);  $0.05 > p > 0.01$  not significant**Table A32.** History of congenital dislocation of hip

Number of boys = 4059; Number of girls = 3926; Total = 7985

	Yes	No	TOTAL	Incidence per cent	Don't know	No data
Boys	2	4053	4055	0.05	0	4
Girls	12	3906	3918	0.3	5	3

Sex difference - Chi-squared = 7.5 (1 d.f.);  $0.01 > p > 0.001$



**Table A34.** Hospital admissions (summary)

Number of boys = 4059; Number of girls = 3926; Total = 7985

Reasons for admission	Percentages of children		Sex differences	
	Boys	Girls	Chi-squared (1 d.f.)	P Value
(a) Tonsils and/or adenoids	15.3	15.7	0.2	> 0.05 not sig.
(b) Abdominal operation	1.7	1.1	5.7	0.05 > <i>p</i> > 0.01 not sig.
(c) Hernia repair	2.7	1.0	32.2	< 0.001
(d) Other operation (incl. blood transfusions)	8.5	3.8	74.5	< 0.001
(e) Road accident	3.0	1.7	13.6	< 0.001
(f) Home accident (e.g. burns, scalds, poisoning, injury)	9.9	8.8	2.9	> 0.05 not sig.
(g) Other accident or injury	9.7	6.9	20.6	< 0.001
(h) Illness, investigations or tests	11.7	11.7	0.0	> 0.05 not sig.
(i) Hospital admission for any other reason	5.5	3.8	12.6	< 0.001

Numbers on which the above percentages are based are shown in Tables A34a-i

**Table A34a.** History of hospital admission for tonsils/adenoids

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	15	8	7
Yes	1233	619	614
No	6728	3429	3299
No data	9	3	6

**Table A34b.** History of hospital admission for abdominal operation

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	19	12	7
Yes	113	70	43
No	7838	3967	3871
No data	15	10	5

**Table A34c.** History of hospital admission for hernia repair

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	13	7	6
Yes	149	110	39
No	7808	3933	3875
No data	15	9	6

**Table A34d.** History of hospital admission for other operation (including blood transfusions)

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	25	13	12
Yes	491	342	149
No	7433	3683	3750
No data	36	21	15

**Table A34e.** History of hospital admission for road accident

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	10	3	7
Yes	187	120	67
No	7780	3931	3849
No data	8	5	3

**Table A34f.** History of hospital admission for home accident

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	20	10	10
Yes	740	398	342
No	7204	3639	3565
No data	21	12	9

**Table A34g.** History of hospital admission for other accident or injury

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	25	15	10
Yes	660	391	269
No	7260	3632	3628
No data	40	21	19

**Table A34h.** History of hospital admission for illnesses, investigations, tests

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	38	22	16
Yes	926	470	456
No	6969	3541	3428
No data	52	26	26

**Table A34i.** History of hospital admission for any other reason

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	50	23	27
Yes	369	221	148
No	7525	3795	3730
No data	41	20	21

**Table A35.** History of developmental milestones (summary)

Number of boys = 4053; Number of girls = 3933; Total = 7986

	Incidence per cent			Sex difference	
	Boys	Girls	TOTAL	Chi-squared	P Value
Not walking alone by 1½ years	5.2	3.4	4.3	15.4	<0.001
Not talking (i.e. joining two words) by 2 years	7.6	4.8	6.2	26.5	<0.001

**Table A35a.** Walking alone by 1½ years

	TOTAL N	Boys N	Girls N
	7986	4053	3933
Don't know	44	27	17
Yes	7593	3815	3778
No	344	210	134
No data	5	1	4

**Table A35b.** Talking by 2 years

	TOTAL N	Boys N	Girls N
	7986	4053	3933
Don't know	88	52	36
Yes	7404	3696	3708
No	491	304	187
No data	3	1	2

**Table A36.** Wet by night after 5 years of age (ignoring occasional mishaps)

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	3	3	0
Yes	870	489	381
No	7103	3562	3541
No data	9	5	4

**Table A37.** Soiled by day after 4 years of age

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	7	5	2
Yes	95	71	24
No	7872	3974	3898
No data	11	9	2

**Table A38.** Wet by day after 3 years of age

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	10	6	4
Yes	347	179	168
No	7621	3869	3752
No data	7	5	2

**Table A39.** Stammer on examination

Number of boys = 4053; Number of girls = 3917; Total = 7970

	None	Stammer			Don't know	No data	GRAND TOTAL
		Slight	Moderate	Severe			
Boys	3937	52	1	1	28	34	4053
Girls	3813	29	3	0	36	36	3917
TOTAL	7750	81	4	1	64	70	7970

**Table A40.** Assessment of speech intelligibility

Number of boys = 4053; Number of girls = 3917; Total = 7970

	Boys	Girls	TOTAL
Speech fully intelligible	3361	3433	6794
Almost all words are intelligible	581	406	987
Many words are unintelligible	66	34	100
All or almost all words are unintelligible	10	4	14
Don't know or unable to test	33	38	71
No data	2	2	4

**Table A41.** Decayed, missing or filled teeth

No. of teeth	Boys	Girls	TOTAL
0	511	479	990
1	355	305	660
2	409	438	847
3	362	374	736
4	492	472	964
5	407	396	803
6	349	367	716
7	317	290	607
8	277	273	550
9	170	187	357
10	143	114	257
11	80	77	157
12	65	55	120
13	40	23	63
14	30	18	48
15	14	8	22
16	9	12	21
17	4	5	9
18	3	2	5
19	4	0	4
20	8	4	12
No data Don't know }	5	18	23
TOTAL	4054	3917	7971

**Table A42.** Vision without glasses

(All boys)

	Right Eye	Left Eye
Over 6/60 or blind	8	7
6/60	11	13
6/36	18	17
6/24	34	35
6/18	42	55
6/12	111	109
6/9	445	446
6/6	3356	3335
TOTAL	4025	4017

**Table A43.** Vision without glasses

(All girls)

	Right Eye	Left Eye
Over 6/60 or blind	5	1
6/60	10	6
6/36	26	23
6/24	27	33
6/18	55	56
6/12	93	99
6/9	434	433
6/6	3241	3229
TOTAL	3891	3880

**Table A44.** History of stutter or stammer

	TOTAL N	Boys N	Girls N
	7986	4053	3933
Don't know	27	13	14
Yes	494	319	175
No	7458	3718	3740
No data	7	3	4

**Table A45.** History of other speech defect

	TOTAL N	Boys N	Girls N
	7986	4053	3933
Don't know	24	14	10
Yes	798	465	333
No	7146	3568	3578
No data	18	6	12

**Table A46.** History of squint or suspected squint

	TOTAL N	Boys N	Girls N
	7985	4058	3927
Don't know	5	0	3
Yes	500	260	240
No	7465	3786	3679
No data	15	10	5

**Table A47.** Squint on examination

	TOTAL N	Boys N	Girls N
	7970	4053	3917
Don't know	32	16	16
Yes	245	129	116
No	7681	3901	3780
No data	12	7	5

**Table A48.** Latent squint on examination

	TOTAL N	Boys N	Girls N
	7970	4053	3917
Don't know	53	26	27
Yes	229	97	132
No	7665	3917	3748
No data	23	13	10

**Table A49.** History of hearing difficulty (suspected or confirmed)

	TOTAL N	Boys N	Girls N
	7985	4059	3926
Don't know	25	16	9
Yes	815	442	373
No	7133	3595	3538
No data	12	6	6

**Table A50.** Hearing test – right ear

No. of incorrect responses	TOTAL	Boys	Girls
	7970	4053	3917
0	5769	2863	2906
1	1348	734	614
2	500	274	226
3	112	63	49
4	66	28	38
5	28	15	13
6	20	13	7
7	10	8	2
8	7	6	1
9 or more	65	25	40
Unable to test	36	19	17
No data	9	5	4

**Table A51.** Hearing test - left ear

No. of incorrect responses	TOTAL	Boys	Girls
	7970	4053	3917
0	5759	2888	2871
1	1331	691	640
2	451	245	206
3	156	94	62
4	77	40	37
5	37	21	16
6	21	8	13
7	16	8	8
8	11	4	7
9 or more	68	32	36
Unable to test	35	18	17
No data	8	4	4



## **Appendix II—The Questionnaires**



# Appendix II—The Questionnaires

STRICTLY CONFIDENTIAL

65/1

## EDUCATIONAL ASSESSMENT NATIONAL CHILD DEVELOPMENT STUDY (1958 Cohort)

Adam House, 1, Fitzroy Square, London, W.1  
EUSton 4263

**SPONSORS:**  
Institute of Child Health, University of London  
National Birthday Trust Fund  
National Bureau for Cooperation in Child Care  
National Foundation for Educational Research in England and Wales

**IN COLLABORATION WITH:**  
ENGLAND: Association of Chief Education Officers  
AND WALES: Society of Medical Officers of Health  
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**SENIOR RESEARCH OFFICER:**  
R. Davis, B.A.

**SENIOR MEDICAL RESEARCH OFFICER:**  
M. J. Ball, B.Sc., M.B., B.S., D.P.H.

Local Authority Code Number	Child's Code Number									
Col. 2	3	4	5	6	7	8	9	10		

- CHILD'S NAME (Surname) \_\_\_\_\_  
(Christian Names) \_\_\_\_\_
- SEX \_\_\_\_\_  
(Please ring appropriate number) Boy  
Girl
- DATE OF BIRTH \_\_\_\_\_ / 3 / 58
- TODAY'S DATE \_\_\_\_\_ / \_\_\_\_\_ / 65
- NAME AND ADDRESS OF PRESENT SCHOOL \_\_\_\_\_  
\_\_\_\_\_
- TELEPHONE NUMBER OF SCHOOL \_\_\_\_\_
- NAME OF HEADMASTER/HEADMISTRESS \_\_\_\_\_
- DATE OF CHILD'S ADMISSION TO PRESENT SCHOOL \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_
- Child's previous School (if any). Please give name and address, if known, or any other information which will enable us to trace the school.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- NAME OF TEACHER COMPLETING SECTIONS "C" TO "E" OF THIS QUESTIONNAIRE \_\_\_\_\_

The INTRODUCTORY NOTES AND INSTRUCTIONS are  
inserted in the centre of this Booklet.

Col. 1
Card No.
<input type="text" value="1"/>
Leave blank
Col. 11
1
2
Col. 12
<input type="text"/>
Leave blank
Col. 13-14
<input type="text"/>
Leave blank

1

## SECTION A

*This section would, most appropriately, be completed by the Headmaster/Headmistress*

11. Does your school have:

Day pupils only? \_\_\_\_\_

Boarders only? \_\_\_\_\_

Some day pupils and some boarders? \_\_\_\_\_

*Please ring  
appropriate  
number*

Col. 15

1

2

3

FOR SCHOOLS MAINTAINED BY A LOCAL EDUCATION AUTHORITY  
(All others please ring code "0" for Questions 12 and 13)

Col. 16

12. Please indicate appropriate category:

Infant School \_\_\_\_\_

Junior with Infants School (or Primary with Infants) \_\_\_\_\_

All-age \_\_\_\_\_

Day Special School (please specify type/s of handicap) \_\_\_\_\_

Residential Special School (please specify type/s of handicap) \_\_\_\_\_

Other (please specify) \_\_\_\_\_

Inapplicable \_\_\_\_\_

1

2

3

4

5

6

0

13. Has your school a "nursery class"? (as specified by your Local Education Authority)

Yes \_\_\_\_\_

No \_\_\_\_\_

Inapplicable \_\_\_\_\_

Col. 17

1

2

0

FOR SCHOOLS NOT MAINTAINED BY A LOCAL EDUCATION AUTHORITY  
(L.E.A. maintained schools please ring code "0" in Questions 14 and 15)

Col. 18

14. Please indicate appropriate category:

Independent School (to include grant-aided schools) catering wholly or mainly for children who are not handicapped \_\_\_\_\_

Special School for handicapped children (please specify type/s of handicap) \_\_\_\_\_

Other (please specify) \_\_\_\_\_

Inapplicable \_\_\_\_\_

1

2

3

0

15. Has your school a "nursery" or "kindergarten" class?

Yes \_\_\_\_\_

No \_\_\_\_\_

Inapplicable \_\_\_\_\_

Col. 19

1

2

0



## SECTION B

*This section would, most appropriately, be completed by the Headmaster/Headmistress*

		Please ring appropriate number
22. At what age was the systematic teaching of phonics (i.e. letter sounds) commenced with this child in school?		Col. 37
Under 5 years of age—	_____	1
From 5 years to 5 years 5 months—	_____	2
From 5 years 6 months to 5 years 11 months—	_____	3
From 6 years to 6 years 5 months—	_____	4
From 6 years 6 months to 6 years 11 months—	_____	5
From 7 years to 7 years 5 months—	_____	6
Not commenced—	_____	7
Don't know (e.g. commenced in another school) or can't answer the question—	_____	0
23. Please comment on this or any other factors about the approach to reading in your school which relate to this child	_____	Col. 38
24. At what age was this child introduced to "sums" (i.e. "formal" written arithmetic) in school?		
Under 5 years of age—	_____	1
From 5 years to 5 years 5 months—	_____	2
From 5 years 6 months to 5 years 11 months—	_____	3
From 6 years to 6 years 5 months—	_____	4
From 6 years 6 months to 6 years 11 months—	_____	5
From 7 years to 7 years 5 months—	_____	6
Not commenced "sums"—	_____	7
Don't know (e.g. commenced at another school) or can't answer the question—	_____	0
Please comment on this or any other factors about the approach to arithmetic, or mathematics in your school which relate to this child	_____	Col. 39
25. Is the child, because of a physical or sensory handicap (e.g. partial hearing loss), in a teaching unit attached to your school?	Yes _____ No _____	1 2
If Yes, please state category of unit	_____	Col. 40
26. Apart from anything which the class teacher may be able to do in the normal way, is the child receiving any help within the school because of educational or mental backwardness? (Ring "0" if the child is in a special school)	Yes _____ No _____ Inapplicable _____	1 2 0
27. If not, do you consider he/she would benefit from such help within the school, at the present time? (Ring "0" if the child is in a special school)	Yes _____ No _____ Inapplicable _____	3 4 0

		Please ring appropriate number
<b>28. Do you consider, irrespective of the facilities in your area, that the child:</b>		
(a) Would benefit <i>now</i> from attendance at a special school?		Col. 41
(Ring "0" if child is already in a special school)		
Yes	_____	1
No	_____	2
Can't say	_____	3
Inapplicable	_____	0
(b) Is likely to need some form of special schooling or other special educational help within the next two years?		Col. 42
(Ring "0" if child is already in a special school)		
Yes	_____	1
No	_____	2
Can't say	_____	3
Inapplicable	_____	0
<b>29. Has the child, because of difficulties which have affected his progress or behaviour in school, been referred to your knowledge to any agency? (e.g. School Health Service, Child Guidance Clinic, School Psychological Service, Education Welfare Service or School Attendance Officer, Children's Department, General Practitioner, Private Specialist).</b>		
(Include referrals made at a routine medical examination, and any made by another school or by the parents, if known.)		Col. 43
Yes	_____	1
No	_____	2
If Yes, please state agency/agencies involved and, briefly, the reasons for referral		Col. 44
_____		
_____		
_____		
_____		
_____		
<b>30. Has the child to your knowledge had difficulties which have affected his progress or behaviour in school but which have now disappeared? (Do not include any difficulties which have prompted referral to an outside agency, as above).</b>		
Yes	_____	1
No	_____	2
If Yes, please outline, briefly, the difficulties		
_____		
_____		
_____		
_____		
_____		
<b>31. Since September, 1964, have the parents taken the initiative to discuss the child, even briefly, with you or any member of your teaching staff?</b>		
Yes	_____	1
No	_____	2
<b>32. Has there been any such discussion with the parents at the instigation of you or your teaching staff?</b>		
Yes	_____	1
No	_____	2

5

33. With regard to the child's educational progress, do the parents appear:  
(Please ring one code only for each parent)

Over concerned about the child's progress and/or  
expecting too high a standard? \_\_\_\_\_  
Very interested? \_\_\_\_\_  
To show some interest? \_\_\_\_\_  
To show little or no interest? \_\_\_\_\_  
Can't say or inapplicable \_\_\_\_\_

Please ring  
appropriate  
number

Col. 47 Mother	Col. 48 Father
1	1
2	2
3	3
4	4
0	0

34. When the child started at your school, did he/she:

(Ring "0" if child has been with you less than 3 months)

Settle down within a month? \_\_\_\_\_  
Settle down within 1-3 months? \_\_\_\_\_  
Remain unsettled after 3 months? \_\_\_\_\_  
Can't say \_\_\_\_\_  
Inapplicable \_\_\_\_\_

Col. 49

1

2

3

4

0

### SECTION C

This and subsequent sections would, most appropriately, be completed by the class teacher or the teacher who knows the child best.

35. For how many school terms do pupils usually stay in the child's present class? \_\_\_\_\_

(Please enter actual number of terms in box, e.g. for 6 terms enter ; if you find it impossible to answer, enter  and give reason).

Col. 50 - 51

<input type="text"/>	<input type="text"/>
----------------------	----------------------

36. Number of Pupils in Child's Present Class

(Please enter the number in the boxes, e.g. if 9 children enter ; if none enter .

Number of Pupils 7 years of age or older on 2nd September, 1964 \_\_\_\_\_

Col. 52 - 53

<input type="text"/>	<input type="text"/>
----------------------	----------------------

The Remainder (i.e. those pupils under 7 years of age on 2nd September, 1964) \_\_\_\_\_

Col. 54 - 55

<input type="text"/>	<input type="text"/>
----------------------	----------------------

Total Number of Pupils in Child's Present Class \_\_\_\_\_

Col. 56 - 57

<input type="text"/>	<input type="text"/>
----------------------	----------------------

37. Is the child's class single sex?

Yes

No

Col. 58

1

2

38. How is this class formed? (Please ring one code only.)

- All the infants are in this one class—  
 A deliberate cross-section by age and ability of more than one year group of children—sometimes called "family grouping"—  
 By age in year groups (e.g. one class per year, or parallel classes)—  
 Selected by age within the year group (e.g. children born in the first half of the year in one class, and the remainder in another)—  
 An upper ability (or attainment) class within the school—  
 A middle ability (or attainment) class within the school (e.g. of 3 classes)—  
 A lower ability (or attainment) class within the school—  
 Other arrangement (please specify)——

Please ring appropriate number

Col. 59

1

2

3

4

5

6

7

8

39. Please enter in the boxes below the approximate numbers of fathers of the children in this class who fall in the three occupational groups. What is required is an estimate only, without putting you to the trouble of enquiring amongst parents or children, which in any case might be difficult. If you feel you cannot answer this question, please enter   in the boxes.

#### OCCUPATIONS

(a) **Professional, Managerial, Clerical and Skilled Non-Manual**, e.g. Doctors, Teachers, Civil Service and Local Government Employees (Administrative, Executive and Clerical Grades), Service Officers, Inspectors and other Senior Police Officers, Draughtsmen, Surveyors, Sales Representatives, Shop Salesmen and Assistants——

Col. 60 - 61

(b) **Skilled and Semi-skilled Manual**, e.g. Market Gardeners, Electricians, Fitters, Foremen, Bus Drivers and Conductors, Miners, Police Constables, Packers, Caretakers, Roundsmen, Butchers, Fishmongers, Agricultural Workers, Street Vendors, Hawkers——

Col. 62 - 63

(c) **Unskilled Manual**, e.g. Unskilled General Labourers, Stevedores, Porters, Casual Workers, Kitchen Hands, Lorry Drivers' Mates, Window Cleaners——

Col. 64 - 65

(d) **Unknown**. (Please enter   if none)——

Col. 66 - 67

40. How many children are there in your class whose parents have seen you (or the Headteacher) to discuss their child, since September, 1964? (Please enter the actual number in the box. If you have not had charge of the class since this date, enter  ; if you share the class with another teacher, please enter a total figure)——

Col. 68 - 69

41. Number of possible half-day attendances for this child since September, 1964——

Col. 70 - 71 - 72

42. Number of half-days absent during this period——

Col. 73 - 74 - 75

## SECTION D

You are asked below to rate some aspects of the child's ability and attainment. Each area is subdivided into five categories. It is expected that in a truly representative cross-section of children of this age, approximately five per cent. fall into the first category, the next 25 per cent. would fit the second description, the middle or average group of 40 per cent. would be in the third category, the next 25 per cent. in the fourth category and the final five per cent. in the fifth category.

In so far as your professional experience will allow, please rate the child *in relation to all children of this age* (i.e., not just his present class or, even, school) by ringing the number opposite the appropriate description.

		Please ring appropriate number
43. Oral Ability	In conversation expresses himself well—	Col. 76 1
	In conversation, or oral lessons, has good vocabulary and variety of phrases in relation to his age—	2
	Average oral ability for his age—	3
	Below average oral ability, tends to use simple word groupings—	4
	Markedly poor oral ability—	5
44. Awareness of the world around him	Exceptionally well-informed for his age—	Col. 77 1
	Good background of general knowledge—	2
	Average in this respect—	3
	Rather limited knowledge—	4
	Largely ignorant of the world around him. Lack of general knowledge is a substantial handicap in school—	5
45. Reading	Avid reader. Reads fluently and widely in relation to his age—	Col. 78 1
	Above average ability. Comprehends well what he reads—	2
	Average reader—	3
	Poor reader. Limited comprehension—	4
	Non-reader, or recognises very few words—	5
46. Creativity (e.g. in free writing, telling a story, hand-work, painting, drawing, dramatic work)	Shows marked originality or creativity in most areas—	Col. 79 1
	Usually produces good, original work—	2
	Shows some imagination or originality in most areas—	3
	Little originality or creativity in all areas—	4
	Never shows a trace of originality or creativity in any of his work—	5
47. Number Work	Extremely good facility with number and/or other mathematical concepts. Grasps new processes very quickly. Shows insight and understanding—	Col. 80 1
	Understanding of number work well developed. Grasps new processes without difficulty—	2
	Average ability in this sphere—	3
	Rather slow to understand new processes. Rather poor facility with numbers, although able to do some things by rote—	4
	Little, if any, ability in this sphere. Shows virtually no understanding at all—	5

8

Card No.	2									
Col. 1	Col. 2	3	4	5	6	7	8	9	10	

Please leave blank

## 48. Basic Reading Scheme used by this child.

Please detail child's present reading standard:

- Beyond basic reading scheme \_\_\_\_\_  
 At present on Book 4 \_\_\_\_\_  
 At present on Book 3 \_\_\_\_\_  
 At present on Book 2 \_\_\_\_\_  
 At present on Book 1 or introductory book \_\_\_\_\_  
 On pre-reading activities only \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_

Please ring appropriate number

Col. 11

- 1  
2  
3  
4  
5  
6  
0

## SECTION E

Below are a few descriptions of behaviour shown by some children. It is assumed that any one particular description will fit only a minority of children, but the proportion of seven-year-old children who show at least one of the aspects of behaviour listed below in some degree is, possibly, considerable. It is hoped that this section will throw some light on this question.

If the child certainly fits the description, please circle the figure "1" in the first column. If it is a marginal case, or you are in some doubt about the child's inclusion under this description, please circle the figure "2" in the next column. If the description does not fit the child at all, circle the figure "3".

	<i>Certainly applies</i>	<i>Applies somewhat</i>	<i>Doesn't apply</i>	<i>Don't know</i>	
49. Poor control of hands (e.g., in writing, drawing, handwork, or buttoning coat) _____	1	2	3	0	Col. 12
50. Squirmy, fidgety child _____	1	2	3	0	Col. 13
51. Poor physical co-ordination (e.g., in running, jumping, or throwing) _____	1	2	3	0	Col. 14
52. Clumsy _____	1	2	3	0	Col. 15
53. Often running or jumping about; hardly ever still _____	1	2	3	0	Col. 16
54. Over-dependent upon mother _____	1	2	3	0	Col. 17
55. Difficult to understand because of poor speech _____	1	2	3	0	Col. 18
56. Imperfect grasp of English (i.e., when native language is other than English) _____	1	2	3	0	Col. 19

10

PROBLEM ARITHMETIC TEST

Child's Name \_\_\_\_\_

1. Peter had 4 toy cars and he bought 2 more. How many toy cars did he have altogether? \_\_\_\_\_  
toy cars
2. A man had 8 books and he lost 3 of them. How many books did he have left? \_\_\_\_\_  
books
3. How many socks are there in 4 pairs? \_\_\_\_\_  
socks
4. If ice creams cost 3d. each, how many can I buy for 1s.? \_\_\_\_\_  
ice creams
5. How many inches are there in 2 feet? \_\_\_\_\_  
inches
6. There are 2 cakes to be shared between 4 boys. How much cake will each boy get? \_\_\_\_\_  
cake
7. John has 9d. He spends 2½d. How much has he left? \_\_\_\_\_  
d.
8. How many ½d. stamps can I buy for 9½d.? \_\_\_\_\_  
stamps
9. What is half of 38? \_\_\_\_\_
10. A boy spent 4d. a day for 5 days. How much would he have left from 2s.? \_\_\_\_\_

Problem Arithmetic Score

Please enter the total number of correct answers in the box, discounting any answer after three successive incorrect ones. (For a score of 5, enter 

0	5
---	---

)

Col. 20 - 21

--	--

Southgate Group Reading Test 1c Score

Please transfer to this box the raw score from the front of the reading test booklet

Col. 22 - 23

--	--



To make the fullest use of this opportunity, an interdisciplinary project, the National Child Development Study (1958 Cohort) is being sponsored by the four organisations detailed on the front of this booklet. The present phase of this study, which will cover some 16,000 children, is being financed from Government funds. It is inevitable in an undertaking of this size that a good deal of the information to be obtained will be gathered by individual doctors, health visitors, head and class teachers. We are most grateful for the assurances which have already been received that maximum co-operation will be given to this study. We do not underestimate the amount of work involved but we hope that you will feel the project worthy of your professional skill and time.

It has been decided to collect information, if possible, from three sources. The school will make an assessment of the child's progress, and give a few attainment tests. The mother of the child is to be interviewed and the Parental Questionnaire completed by, in most cases, a health visitor. Finally, we hope that the child can be examined by a doctor, who will complete the Medical Questionnaire.

#### The Parental Questionnaire

This questionnaire would best be completed during an interview with the child's mother. If for any reason the mother is unavailable, please interview the person who can best answer questions about the child's health and development. Occasionally, a child will not now be living with his own (i.e. natural) mother. In this circumstance, please interview the person who has become for the child a, more or less, permanent mother substitute. Throughout the questionnaire the term "mother" should be taken to imply the child's mother or the permanent mother substitute, except on those few occasions where the term "own mother" is used. The word "father" refers to the child's father or, where appropriate, to the male head of the household.

In interviewing the mother, please assure her at the outset that her answers will be treated in the strictest confidence and that the 16,000 children concerned will be identified by numbers only. If in the light of the mother's response during the interview you feel that a particular question might best be omitted, please feel free to do this, although we are anxious to have the questionnaires fully completed.

Most of the questionnaire has been framed as a series of items to which a number of possible answers is stated. Would you please ring the number in the column opposite the answer you wish to make. We have tried to anticipate likely answers but, where appropriate, have left space for other replies. We apologise to those who may find this approach inhibiting; it has been used to reduce your clerical work and ours. It also simplifies later analysis of the replies. If, however, you feel that a particular answer needs some qualification or amplification, please add comments at that point on the questionnaire.

#### Examples of Scoring

No	Yes	Don't know
2	1	0

Col. 86

No \_\_\_\_\_  
 Yes \_\_\_\_\_  
 Don't know \_\_\_\_\_

Col. 87
2
①
0



- (b) Please list any children of the household not included in list (a), e.g. those who are only at home for holidays or leave.

Surname	Christian Name	Sex	Age (approx. if necessary)	Relationship to Child, or Status in the Household

14. From the above two tables, please state the total number of children of the household under the age of 21. (Enter the actual number in the box, e.g. for 4 enter )

Col. 29-30

15. Please state the child's position amongst these children. (For eldest, enter ; for Don't know or inapplicable enter )

Col. 31-32

16. Please ascertain, or state to your knowledge, whether the child is normally cared for by his/her:

Please ring appropriate number

Col. 33

- Own mother \_\_\_\_\_  
 Stepmother \_\_\_\_\_  
 Foster mother \_\_\_\_\_  
 Adoptive mother (i.e. child is legally adopted) \_\_\_\_\_  
 Grandmother \_\_\_\_\_  
 Other person \_\_\_\_\_  
 (Please specify) \_\_\_\_\_  
 Other situation \_\_\_\_\_  
 (Please specify) \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_

 1  
 2  
 3  
 4  
 5  
 6  
 7  
 0

If not child's own mother, please ascertain how old the child was when he/she came under the care of the present mother substitute. \_\_\_\_\_ mths./yrs.

17. Please ascertain, or state to your knowledge, whether the child's father is his/her:

Please ring appropriate number

Col. 34

- Own father \_\_\_\_\_  
 Stepfather \_\_\_\_\_  
 Foster father \_\_\_\_\_  
 Adoptive father (i.e. child is legally adopted) \_\_\_\_\_  
 Grandfather \_\_\_\_\_  
 Other person \_\_\_\_\_  
 (Please specify) \_\_\_\_\_  
 Other situation \_\_\_\_\_  
 (Please specify) \_\_\_\_\_  
 Inapplicable (e.g. no father or no male head of household) \_\_\_\_\_  
 Don't know \_\_\_\_\_

 1  
 2  
 3  
 4  
 5  
 6  
 7  
 8  
 0

If not child's own father, please ascertain how old the child was when he/she came under the care of the present father substitute. \_\_\_\_\_ mths./yrs.

5

## Child's School and Pre-school Experience

18. Did the child attend a local authority or a private nursery school or class?  
(Do not include day nursery or playgroup attendance)

(Code as "No" if attended for less than one month in total)

Yes \_\_\_\_\_  
No \_\_\_\_\_  
Don't know \_\_\_\_\_

Please ring appropriate number	
Local authority nursery school or class	Private nursery school or class
Col. 35	Col. 36
1	1
2	2
0	0

If the child attended a local authority nursery school or class, please enquire name of school and local authority, or area.

19. If the child attended a nursery class, was this in his/her present school?

(If the child has not attended a nursery class, please ring "0")

Yes \_\_\_\_\_  
No \_\_\_\_\_  
Don't know or inapplicable \_\_\_\_\_

Please ring appropriate number	
Col. 37	
	1
	2
	0

20. Has the child attended a local authority day nursery?

Yes \_\_\_\_\_  
No \_\_\_\_\_  
Don't know \_\_\_\_\_

Please ring appropriate number	
Col. 38	
	1
	2
	0

If Yes, please enquire name of day nursery and local authority, or area:

21. Apart from anything already mentioned, has the child had any other pre-school experience of an organised nature? (e.g. private day nursery, playgroup).

Yes \_\_\_\_\_  
No \_\_\_\_\_  
Don't know \_\_\_\_\_

Please ring appropriate number	
Col. 39	
	1
	2
	0

If yes, please state nature of group \_\_\_\_\_

22. How old was the child when he/she first started school part-time, where appropriate, and full-time? (Include nursery school but not attendance at a day nursery.)

(If the child has never received any schooling, please ring "0")

Under 3½ yrs. old \_\_\_\_\_  
3½ yrs. but less than 4 \_\_\_\_\_  
4 yrs. but less than 4½ \_\_\_\_\_  
4½ yrs. but less than 5 \_\_\_\_\_  
5 yrs. but less than 5½ \_\_\_\_\_  
5½ yrs. but less than 6 \_\_\_\_\_  
6 yrs. or older \_\_\_\_\_  
Don't know or inapplicable \_\_\_\_\_

Please ring appropriate number	
Part-time Schooling	Full-time Schooling
Col. 40	Col. 41
1	1
2	2
3	3
4	4
5	5
6	6
7	7
0	0

23. Since the age of five, how many schools has the child attended? (Count the present school as one; please write the actual number in the box; for "Don't know" or "Inapplicable", enter 0 0.)

Col. 42-43

--	--

6

24. When the child first started school, how soon did he/she settle down? (This refers to nursery schooling, where appropriate, and other schooling, where not.)

Please ring appropriate number

Within a month \_\_\_\_\_  
 Within 1-3 months \_\_\_\_\_  
 Was still unsettled after 3 months \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_

Col. 44

1

2

3

0

25. Is the child happy at his/her present school?

(If the child has been at his/her present school less than three months, please ring "0")

Happy \_\_\_\_\_  
 Not altogether happy \_\_\_\_\_  
 Unhappy \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_

Col. 45

1

2

3

0

26. Would the parents like the child to be able to stay on at secondary school after the minimum school leaving age?

Yes \_\_\_\_\_  
 No \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_  
 Other (Please specify) \_\_\_\_\_

Col. 46

1

2

0

3

27. Is the child at all awkward or clumsy when:

Not at all      A little      Certainly      Don't know or inapplicable

(a) Walking? \_\_\_\_\_ 2      3      1      0

Col. 47

(b) Running? \_\_\_\_\_ 2      3      1      0

Col. 48

(c) Climbing stairs? \_\_\_\_\_ 2      3      1      0

Col. 49

(d) Tying a bow? \_\_\_\_\_ 2      3      1      0

Col. 50

28. Is the child:

Normally active? \_\_\_\_\_  
 Inactive and quiet (prefers to sit and watch)? \_\_\_\_\_  
 Restless and overactive (can't keep still)? \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_

Col. 51

1

2

3

0

29. Does the child meet other children outside the household?  
 (Exclude going to and from, and in school.)

Most days, or every day \_\_\_\_\_  
 Quite often \_\_\_\_\_  
 Very little \_\_\_\_\_  
 Not at all \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_

Col. 52

1

2

3

4

0

7

30. Please read this to the mother: "I am going to mention a few difficulties of various kinds which many children have at some time. I'd like you to tell me first whether any of these things have occurred during the last 3 months".  
(If occurred only during acute infection, please ring '0')

	Has occurred in last 3 months			
	Yes	No	Don't know or inapplicable	
(a) Has complained of headaches (more than once)——	1	2	0	Col. 53
(b) Has had temper tantrum——	1	2	0	Col. 54
(c) Has been reluctant to go to school——	1	2	0	Col. 55
(d) Has had bad dreams or night terrors——	1	2	0	Col. 56
(e) Has had difficulty in getting off to sleep——	1	2	0	Col. 57
(f) Has sleepwalked——	1	2	0	Col. 58
(g) Has been faddy—many dislikes over food——	1	2	0	Col. 59
(h) Has had poor appetite——	1	2	0	Col. 60
(i) Has overeaten for more than the occasional meal——	1	2	0	Col. 61

31. "Were you concerned about any of these or other problems before the child started school?"

Yes \_\_\_\_\_  
No \_\_\_\_\_  
Don't know \_\_\_\_\_

Col. 62  
1  
2  
0

If Yes, please specify which problems caused concern \_\_\_\_\_  
\_\_\_\_\_

32. "Have you been concerned about any of these or other problems since he/she has been at school?"  
(But excluding last 3 months.)

Yes \_\_\_\_\_  
No \_\_\_\_\_  
Don't know \_\_\_\_\_

Col. 63  
1  
2  
0

If Yes, please specify which difficulties have caused concern.....  
\_\_\_\_\_  
\_\_\_\_\_

33. Has the child been in the care of the local authority?

Yes, is "in care" now \_\_\_\_\_  
Yes, has been "in care" in the past but is not now \_\_\_\_\_  
No, has never been "in care" \_\_\_\_\_  
Don't know \_\_\_\_\_

Col. 64  
1  
2  
3  
0

If Yes, please give child's age at the time and local authority or area \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8

34. Please read this to the mother: "Now I want to mention some description of behaviour shown by many children. I'd like you, first, to tell me whether these kinds of behaviour never happen with \_\_\_\_\_ whether they happen sometimes, or frequently at the present time".

Please ring appropriate number

	Never	Sometimes	Frequently	Don't know or inapplicable	
(a) Has difficulty in settling to anything for more than a few moments—	3	2	1	0	Col. 65
(b) Prefers to do things on his/her own rather than with others—	3	2	1	0	Col. 66
(c) Is bullied by other children—	3	2	1	0	Col. 67
(d) Destroys own or others belongings (e.g. tears or breaks)—	3	2	1	0	Col. 68
(e) Is miserable or tearful—	3	2	1	0	Col. 69
(f) Is squirmy or fidgety—	3	2	1	0	Col. 70
(g) Worries about many things—	3	2	1	0	Col. 71
(h) Is irritable, quick to fly off the handle—	3	2	1	0	Col. 72
(i) Sucks thumb or finger during day—	3	2	1	0	Col. 73
(j) Is upset by new situation, by things happening for first time—	3	2	1	0	Col. 74
(k) Has twitches or mannerisms of the face, eyes or body—	3	2	1	0	Col. 75
(l) Fights with other children—	3	2	1	0	Col. 76
(m) Bites nails—	3	2	1	0	Col. 77
(n) Is disobedient at home—	3	2	1	0	Col. 78

35. Did any of these or other aspects of behaviour cause you any concern before the child started school?

Yes \_\_\_\_\_  
 No \_\_\_\_\_  
 Don't know \_\_\_\_\_

If Yes, please specify the aspects involved

Col. 79

1  
2  
0

Col. 80

36. Have any of these or other aspects caused you any concern since he/she has been at school? (but not at present).

Yes \_\_\_\_\_  
 No \_\_\_\_\_  
 Don't know \_\_\_\_\_

If Yes, please specify the aspects involved

1  
2  
0

9

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3

Col. 1

Col. 2

3

4

5

6

7

8

9

10

Col. 11

37. Has the child ever been separated from the mother? (i.e. overnight).

(If the answer to this question is No, Don't know or Inapplicable, please ignore the rest of this page).

Yes \_\_\_\_\_

No \_\_\_\_\_

Don't know or inapplicable \_\_\_\_\_

Col. 12

1

2

0

38. Has the child ever been separated from the mother for a period longer than a week?

(If the answer to this question is No, Don't know or Inapplicable, please ignore the rest of this page).

Yes \_\_\_\_\_

No \_\_\_\_\_

Don't know or inapplicable \_\_\_\_\_

Col. 13

1

2

0

39. Please obtain the following details about the child's longest period of separation from the mother & (i.e. longer than a week) and his/her first period of separation longer than a week. If the occasion

40. was the same one, please nevertheless complete both columns.

39. Longest Period of Separation
- 
- from Mother.

Col. 14 - 15 - 16			
_____ days			
Col. 17	Col. 18 - 19		
_____ yrs.	_____ mths.		

(a) Duration in days  
(e.g., for 11 days  
enter 0 1 1)(b) Age of Child  
at Separation

40. First Separation from
- 
- Mother.

Col. 22 - 23 - 24			
_____ days			
Col. 25	Col. 26 - 27		
_____ yrs.	_____ mths.		

(c) Contact between  
Child and Mother

At least daily

At least weekly

At least monthly

No contact

Don't know or inapplicable

Please  
ring  
appropri-  
ate  
number

Col. 20
1
2
3
4
0

1  
2  
3  
4  
0Please  
ring  
appropri-  
ate  
number

(d) Child's Placement

At home

In hospital

At home of relative or friend  
known to the child

Boarding school or institution

Don't know or inapplicable

Other placement  
(Please specify)

Col. 21
1
2
3
4
0
5

1  
2  
3  
4  
0  
5

(e) Reason for Separation

41. How many different periods of separation have there been?

Before the age of five \_\_\_\_\_

(e.g. for 2 enter 0 2)

Since the age of five \_\_\_\_\_

Col. 30-31

_____	_____
-------	-------

Col. 32-33

_____	_____
-------	-------

10

42. Does either parent read to, or read with, the child?

	<i>Yes, at least every week</i>	<i>Yes, occasionally</i>	<i>Never, or hardly ever</i>	<i>Don't know or inapplicable</i>	
Mother _____	1	2	3	0	Col. 34
Father _____	1	2	3	0	Col. 35

43. Do the parents take the child out? (e.g. for walks, outings, picnics, visits, shopping).

	<i>Yes, most weeks</i>	<i>Yes, occasionally</i>	<i>Never or hardly ever</i>	<i>Don't know or inapplicable</i>	
Mother _____	1	2	3	0	Col. 36
Father _____	1	2	3	0	Col. 37

44. Does the father take a big part in managing the child, or leave mainly to mother?

*(If father is away a lot ring 2 or 3 as applicable)*

Father takes a big part, or equal part with mother _____	Col. 38
Father takes a smaller part than mother (but mother feels it to be a significant part) _____	1
Father takes a very small part, or leaves to mother _____	2
Don't know or inapplicable _____	3
	0

45. Do the parents themselves do any spare time reading? (e.g. of newspapers, books or magazines).

## (a) Newspapers or Magazines

	<i>Yes, most days</i>	<i>Yes, occasionally</i>	<i>Never or hardly ever</i>	<i>Don't know or inapplicable</i>	
Mother _____	1	2	3	0	Col. 39
Father _____	1	2	3	0	Col. 40

## (b) Books or Technical Journals

	<i>Yes, most weeks</i>	<i>Yes, occasionally</i>	<i>Never, or hardly ever</i>	<i>Don't know or inapplicable</i>	
Mother _____	1	2	3	0	Col. 41
Father _____	1	2	3	0	Col. 42

11

46. What is the occupation of the child's father? (i.e., present male head of household). If not working, give last occupation and give reason, e.g. unemployed, sick. If there is no male head of household, please write "None".

Actual Job \_\_\_\_\_

Industry \_\_\_\_\_

(As much detail as possible should be given. The actual job should show the type of work done so that we may be able to classify by the skill, qualification or responsibility involved. Terms such as "engineer", "civil servant", "electrical worker", "clerk", do not give sufficient information to allow such classification, and should be expanded.)

- Is the father paid weekly, monthly or is he self-employed?

Weekly \_\_\_\_\_ 1  
 Monthly \_\_\_\_\_ 2  
 Self-employed \_\_\_\_\_ 3  
 Don't know \_\_\_\_\_ 0

If self-employed:

- (i) Does he employ 10 or more persons?

Yes \_\_\_\_\_ 1  
 No \_\_\_\_\_ 2  
 Don't know \_\_\_\_\_ 0

If not self-employed:

- (ii) Does he supervise others? (e.g. foreman, manager, charge-hand).

Yes \_\_\_\_\_ 1  
 No \_\_\_\_\_ 2  
 Don't know \_\_\_\_\_ 0

47. When the father left school, what was his father's job?

Actual Job \_\_\_\_\_

Industry \_\_\_\_\_

Was he:

Self-employed, not employing others? \_\_\_\_\_ 1  
 Employer? \_\_\_\_\_ 2  
 Employee, not supervising others? \_\_\_\_\_ 3  
 Employee, supervising others? \_\_\_\_\_ 4  
 Don't know \_\_\_\_\_ 0

48. Did the father stay on at school after the minimum school leaving age?

Yes \_\_\_\_\_  
 No \_\_\_\_\_  
 Don't know \_\_\_\_\_

If Yes, at what age did he finish full-time education? \_\_\_\_\_

49. Has the mother been in paid work since the child's birth? (Include only work outside the home).

	Part-time or Temporary (More than one month's duration)	Full-time	Mother has not worked	Don't know or inapplicable
Before the child started school	1	2	3	0
Since the child started school	1	2	3	0

Please  
leave  
blank

Col. 43

1

2

3

4

5

6

0

Col. 44

1

2

3

4

5

6

0

Col. 45

1

2

0

Col. 46-47

yrs.

If the mother has worked, please give brief details of duration and hours worked \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Col. 48

Col. 49

12

50. What is the accommodation occupied by this household?

Whole house \_\_\_\_\_  
 Flat (self-contained) \_\_\_\_\_  
 Rooms \_\_\_\_\_  
 Other (please specify) \_\_\_\_\_  
 Don't know or inapplicable \_\_\_\_\_

Please ring  
appropriate  
number

Col. 50

1

2

3

4

0

51. Is the accommodation:

Owned by the household, or being bought? \_\_\_\_\_  
 Council rented? \_\_\_\_\_  
 Private rented? \_\_\_\_\_  
 Rent free? \_\_\_\_\_  
 Other (please specify) \_\_\_\_\_

Col. 51

1

2

3

4

5

Don't know or inapplicable \_\_\_\_\_

0

52. How many rooms are there? (Include rooms used by lodgers or relatives who are members of the household; exclude bathroom, scullery or kitchen unless used as a living room) \_\_\_\_\_

Col. 52 - 53

--	--

 rms.

53. Has the household got, or does it share:

	<i>Sole use</i>	<i>Shared</i>	<i>None</i>	<i>Don't know or inapplicable</i>
(a) Bathroom? _____	1	2	3	0
(b) Indoor Lavatory? _____	1	2	3	0
(c) Outside Lavatory? _____	1	2	3	0
(d) Cooking Facilities? _____	1	2	3	0
(e) Hot Water Supply? _____	1	2	3	0
(f) Garden, Yard? _____	1	2	3	0

Col. 54

Col. 55

Col. 56

Col. 57

Col. 58

Col. 59

13

## 54. Did the child attend an Infant Welfare Clinic or Toddlers' Clinic?

	No	Yes Regularly	Yes Occasionally	Don't know	
(a) Infant Welfare Clinic (under 1 year) _____	1	2	3	0	Col. 60
(b) Toddlers' Clinic (1-5 years) _____	1	2	3	0	Col. 61

## 55. IMMUNISATION AND VACCINATION

Has the child received any immunisation against:

	Yes	No (objects to it)	No (all other reasons)	Don't know	
(a) Diphtheria _____	1	2	3	0	Col. 62
(b) Poliomyelitis _____	1	2	3	0	Col. 63
(c) Smallpox _____	1	2	3	0	Col. 64

## 56. What infectious diseases has the child had, and at what ages?

	No	Yes	Don't know	
(a) Measles _____	2	1	0	Col. 65
(b) German measles _____	2	1	0	Col. 66
(c) Whooping cough _____	2	1	0	Col. 67
(d) Chicken pox _____	2	1	0	Col. 68
(e) Mumps _____	2	1	0	Col. 69
(f) Scarlet fever _____	2	1	0	Col. 70
(g) Others _____ (e.g., glandular fever, tuberculosis, etc.) Specify _____	2	1	0	Col. 71

## 57. BREAST FEEDING

Was the child breast fed (partly or wholly) as a baby? \_\_\_\_\_

No	Yes under 1 month	Yes over 1 month	Don't know	
1	2	3	0	Col. 72

## 58. WALKING

By 14 years of age was the child walking alone? \_\_\_\_\_

No	Yes	Don't know	
2	1	0	Col. 73

If not, at what age? \_\_\_\_\_

14

## 59. SPEECH

	No	Yes	Don't know	
(a) By two years of age was the child talking? (i.e., joining two words)	2	1	0	Col. 74
(b) Has there ever been any stammer or stutter—	2	1	0	Col. 75
(c) Any other speech difficulty?—	2	1	0	Col. 76
(d) Is English the mother's usual language with this child?—	2	1	0	Col. 77

If not, at what age? .....

Age at onset  
Present now? .....

Specify .....

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4
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Col. 1

2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	----

Col. 11
---------

## 60. OUT-PATIENT AND CLINIC ATTENDANCES

Has the child attended any of the following?

	No	Yes	Don't know	
(a) Eye dept. or clinic, optician, or orthoptist	2	1	0	Col. 12
(b) Physiotherapy or remedial exercises	2	1	0	Col. 13
(c) Child guidance clinic	2	1	0	Col. 14
(d) Speech therapy	2	1	0	Col. 15
(e) Hearing or audiology	2	1	0	Col. 16
(f) Dental clinic, dentist or orthodontist	2	1	0	Col. 17
(g) Have there been any outpatient, other clinic or specialist appointments?	2	1	0	Col. 18

Name of Hospital  
or Clinic, and Town Age

Specify

## 61. Has the child ever had a dental gas?—

No	Yes	Don't know
2	1	0

Col. 19

If yes, how many times? .....

15

## 62. HOSPITAL ADMISSIONS

Has the child ever been admitted to hospital for any of the following:

	No	Yes	Don't know	
(a) Tonsils and/or adenoids— (Specify) .....	2	1	0	Col. 20
(b) Abdominal operation— (Specify) .....	2	1	0	Col. 21
(c) Hernia repair— (Specify) .....	2	1	0	Col. 22
(d) Other operations (including blood transfusions)— (Specify) .....	2	1	0	Col. 23
(e) Road accidents— (Specify) .....	2	1	0	Col. 24
(f) Home accidents (e.g. burns, scalds, poisoning, injury)— .....	2	1	0	Col. 25
(g) Other accident or injury— (Specify) .....	2	1	0	Col. 26
(h) Illnesses, investigations or tests— (Specify) .....	2	1	0	Col. 27
(i) Hospital admission for any other reason— (Specify) .....	2	1	0	Col. 28

Name of Hospital  
and Town

Age

16

## MEDICAL HISTORY

## 63. GENERAL

- (a) Has the child, to the mother's knowledge, any physical handicap or disabling condition?

No	Yes	Don't know
2	1	0

Col. 29

Specify

- (b) Does the mother consider the child to be particularly sensitive or highly strung?

2	1	0
---	---	---

Col. 30

Specify

## 64. EAR, NOSE AND THROAT

- (a) Has the child had more than 3 throat and/or ear infections (with fever) in the past year?

2	1	0
---	---	---

Col. 31

Has the child ever had:

- (b) Hay fever or sneezing attacks

2	1	0
---	---	---

Col. 32

- (c) Habitual snoring or mouth breathing

2	1	0
---	---	---

Col. 33

- (d) Running ears (i.e. pus, not wax)

2	1	0
---	---	---

Col. 34

- (e) Earache, without running ears

2	1	0
---	---	---

Col. 35

- (f) Hearing difficulty (suspected or confirmed)

2	1	0
---	---	---

Col. 36

- (g) Other ear trouble

2	1	0
---	---	---

Col. 37

No. of times  
in past 12 mths.No. of times  
in past 12 mths.Specify  
Present now?

Age

Specify

## 65. RESPIRATORY SYSTEM

Has the child ever had:

- (a) Attacks of asthma

2	1	0
---	---	---

Col. 38

- (b) Bronchitis with wheezing

2	1	0
---	---	---

Col. 39

- (c) Pneumonia

2	1	0
---	---	---

Col. 40

- (d) Other respiratory disease

2	1	0
---	---	---

Col. 41

No. of times in all?

No. of times  
in past 12 mths.No. of times  
in past 12 mths.

At what age?

Specify

## 66. C.V.S.

Has the child had:

- (a) Rheumatic fever

2	1	0
---	---	---

Col. 42

- (b) Chorea (St. Vitus' Dance)

2	1	0
---	---	---

Col. 43

- (c) Congenital heart condition

2	1	0
---	---	---

Col. 44

- (d) Parent, brother or sister with congenital heart condition

2	1	0
---	---	---

Col. 45

At what age?

At what age?

Specify

Specify

17

## 67. ALIMENTARY AND UROGENITAL SYSTEMS

Has the child ever been/or had:

	No	Yes	Don't know	
(a) Periodic vomiting or bilious attacks	2	1	0	Col. 46
(b) Periodic abdominal pain	2	1	0	Col. 47
(c) Recurrent mouth ulcers	2	1	0	Col. 48
(d) Hernia of any sort	2	1	0	Col. 49
(e) Other serious digestive, bowel or alimentary disorder	2	1	0	Col. 50
(f) Infection in the urine (requiring medical treatment)	2	1	0	Col. 51
(g) Wet by day after 3 years of age (Ignore occasional mishaps)	2	1	0	Col. 52
(h) Wet by night after 5 years of age (Ignore occasional mishaps)	2	1	0	Col. 53
(i) Soiled by day after 4 years of age (Ignore occasional mishaps)	2	1	0	Col. 54
(j) Nephritis or other kidney or U-G disorder	2	1	0	Col. 55
(k) Parent, brother or sister with disorder of alimentary or U-G tract	2	1	0	Col. 56

No. of times in past 12 mths.

No. of times in past 12 mths.

Site

Specify

No. of times in all

No. of times in past 12 mths.

How often in past 12 mths.

How often in past 12 mths.

How often in past 12 mths.

How often in past 12 mths.

Specify

Age

## 68. METABOLISM AND BLOOD

Is there a history of:

(a) Sugar diabetes	2	1	0	Col. 57
(b) Any diabetes in parents, brothers or sisters	2	1	0	Col. 58
(c) Any thyroid, pituitary or adrenal gland disorder	2	1	0	Col. 59
(d) Any blood disorder	2	1	0	Col. 60

Age of onset

Specify

Specify

Specify

## 69. SKIN

Is there a history of:

(a) Eczema in the first year	2	1	0	Col. 61
(b) Eczema after the first year	2	1	0	Col. 62
(c) "Strawberry marks" (raised vascular naevi)	2	1	0	Col. 63
(d) "Port wine stains" (flat vascular naevi)	2	1	0	Col. 64
(e) Other skin condition, including hair or nail disorder	2	1	0	Col. 65

Month of onset

Sites

Any present now?

Sites

Age

Site

Age

Site

Specify

## 70. C.N.S. AND SKELETAL SYSTEM

Has the child had:

	No	Yes	Don't know		
(a) A fit or convulsion in the first year of life	2	1	0	Col. 66	No. in first year
(b) A fit or convulsion after the first year	2	1	0	Col. 67	Age at first fit
(c) Petit mal or "blank spells"	2	1	0	Col. 68	No. in first 12 mths
(d) Frequent headaches or migraine	2	1	0	Col. 69	Total No. of fits
(e) Travel sickness	2	1	0	Col. 70	Age at onset
(f) Tics or habit spasms	2	1	0	Col. 71	No. of times last year
(g) Breath holding, head banging or "rocking"	2	1	0	Col. 72	Any drug treatment for above conditions?
(h) Concussion or head injury (with unconsciousness)	2	1	0	Col. 73	No. of times in past 12 mths?
(i) Unusual size or shape of skull	2	1	0	Col. 74	Age
(j) Any spinal trouble	2	1	0	Col. 75	Specify
(k) Congenital dislocation of hip	2	1	0	Col. 76	Any in past 12 mths?
(l) Talipes	2	1	0	Col. 77	Specify
(m) Any fractures	2	1	0	Col. 78	At what age?
(n) Any other bone or joint disorder	2	1	0	Col. 79	Specify
(o) Has any parent, brother or sister had a fit or convulsion	2	1	0	Col. 80	Age

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Col. 1

Col. 2	3	4	5	6	7	8	9	10	

## 71. LATERALITY

Does the mother think the child is:

Right-handed	Left-handed	Mixed R. and L.	Don't know	
1	2	3	0	Col. 11

## 72. VISION

Has the child had:

	No	Yes	Don't know		
(a) Squint or suspected squint	2	1	0	Col. 12	Specify
(b) Any other eye trouble?	2	1	0	Col. 13	Present now?
(c) Have glasses been prescribed?	2	1	0	Col. 14	Specify
					At what age?
					Reason

19

73. Children Born to this Mother (complete only where the mother is the child's own mother and, if not, please enter   for Questions 73(a) and 73(b).

Please list all children born to this mother. Include the present child, and any that have since died and any stillbirths, ringing the numbers in the appropriate columns. Please enter twins separately, and omit miscarriages.

Date of Birth	Sex		Survival	Birth	Birth Wt. (approx. if necessary)	Complications of Pregnancy			Presentation	Method of Delivery			Please specify any handicap or disability, or cause and date of death
	M	F	Alive now Stillborn Died subsequently	Domiliary Institutional		Normal	Toxaemia A.P.H.	Don't know/Other	Vertex Breech Don't know/Other	Spontaneous Forceps Caesarian	Don't know/Other		
1.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
2.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
3.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
4.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
5.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
6.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
7.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
8.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					
9.		1 2	1 2 3	1 2	lbs. ozs.	1 2 3 0	1 2 3	1 2 3 0					

From the above table, please state first the total number of births including the present child, and then the child's position in birth order. (N.B.: Twins = 1 birth).

(For questions 73(a) and 73(b) include all live and stillbirths and any who have died subsequently)

- (a) Number of births     
(e.g., for 6 births enter   ; if not known or inapplicable enter   .

- (b) Child's position in birth order    
(e.g., for first born enter  .

74. Was this child a single or multiple birth?

- Single birth
- Twins { Identical { First born   
Second born   
Position unknown   
Non-Identical { First born   
Second born   
Position unknown   
Twin birth but no details   
One of triplets   
Don't know

Col. 15-16

Col. 17-18

Please ring appropriate number

Col. 19

1

2

3

4

5

6

7

8

9

0

END OF INTERVIEW

Please thank the mother and ask her to bring or send a sample of the child's urine to the medical examination.  
When completed, please ensure that this questionnaire is in the hands of the doctor in time for his examination of the child.

STRICTLY CONFIDENTIAL

61/3

# NATIONAL CHILD DEVELOPMENT STUDY

(1958 Cohort)

Adam House, 1, Fitzroy Square, London, W.1

Tel.: EUSon 4263-45 (3 lines)

## SPONSORS:

Institute of Child Health, University of London  
 National Birthday Trust Fund  
 National Bureau for Co-operation in Child Care  
 National Foundation for Educational Research in England and Wales

## IN COLLABORATION WITH:

ENGLAND: Association of Chief Education Officers  
 AND WALES: Society of Medical Officers of Health  
 SCOTLAND: Association of Directors of Education  
 Association of School Medical and Dental Officers

## CHAIRMAN OF CONSULTATIVE COMMITTEE:

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## CO-CHAIRMEN OF STEERING COMMITTEE:

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W. D. Hall, B.A., Ph.D.

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Mrs. M. L. Kellmer-Frieling, B.A., Ph.D., Dip. Ed. Psych.

## SENIOR RESEARCH OFFICERS:

E. Davis, B.A.

## SENIOR MEDICAL OFFICER:

M. J. Ball, B.Sc., M.B., B.S., D.P.H.

## MEDICAL QUESTIONNAIRE

Local Authority Code Number	Child's Code Number

CHILD'S NAME (Surname).....

(Christian Names) .....

SEX

(Please ring appropriate number)

Boy—

Girl—

Col. 49

1

2

DATE OF BIRTH ..... / 3 / 58

ADDRESS OF MEDICAL EXAMINATION .....

DATE OF MEDICAL EXAMINATION .....

NAME OF MEDICAL EXAMINER .....

DESIGNATION .....

Col. 50

☐

Leave blank

### INTRODUCTORY NOTES

#### The Purpose of the Study

The child to whom this questionnaire refers is one of the 17,000 children born during the week 3rd to 9th March, 1958, in England, Scotland and Wales.

Shortly after their birth, all these children were the subject of a comprehensive investigation into the circumstances relating to the mother and child, the pregnancy and the birth. The results of this study published in the *Perinatal Mortality Survey* have already had a world-wide influence, and it is hoped that the many doctors and midwives who were involved feel that their efforts have been fully justified.

The *National Child Development Study* is a logical extension of the original investigation to the growing child. Not only is there the need to assess the present physical, educational and emotional status of the child population, but for the first time there is an opportunity to relate these assessments to the existing obstetric and social data of this large national sample.

## 2

Considerable interest is already focussed on the major handicaps of childhood, but much remains to be discovered about the true incidence of these conditions and their aetiology. Even less is known of the incidence and cause of minor disabilities, emotional maladjustments and educational handicaps. This study will throw some light on their occurrence amongst children considered "at risk" of developing handicapping conditions.

This study will also reveal the numbers of children who have been exposed to such predisposing factors, but who are nevertheless developing normally.

### The Scope of the Investigation

The Study is based on information gathered from three sources.

(i) The school is assessing the child's educational progress and social adjustment and is applying some attainment tests. This aspect of the investigation is being undertaken by the Local Education Department.

(ii) The mother of the child is interviewed by a Health Visitor (in most instances) who completes a Parental Questionnaire concerning the child's early life and environment. Details of illnesses, operations and a full medical history are included in this questionnaire, and on completion it will be passed on to the doctor for reference during his examination of the child.

(iii) The Medical Questionnaire comprises a medical history and examination, tests of vision, speech and hearing, physical measurements and a urine test. It is also hoped that an Audiogram will be obtained, at a time convenient to the School Health Department.

### NOTES ON THE MEDICAL QUESTIONNAIRE

The form of this questionnaire has been determined by the need to utilise modern methods of handling a large volume of data. Except where stated otherwise, each question is answered by putting a ring round the appropriate number in each box.

#### Examples of Scoring:

No	Yes	Don't know
2	1	0

Col. 86

No \_\_\_\_\_  
Yes \_\_\_\_\_  
Don't know \_\_\_\_\_

Col. 87
2
①
0

The following order of completion is suggested as the most practical:

#### With the child dressed:

- (1) Front page.
- (2) Medical History. *N.B.*: Since these questions, on pages 4, 6, 8, are identical with pages 16, 17, 18 of the Parental Questionnaire. It is not necessary for the doctor to take a second medical history if the latter is to hand and has been answered to his satisfaction.

(3) Vision, Speech and Hearing tests.

(4) Urinary urine test.

#### With the child undressed:

(5) Height, Weight and Head circumference.

(6) Medical examination.

(7) Completion of questionnaire.

3

1. Is the child accompanied at the medical examination by:

Mother \_\_\_\_\_

Father \_\_\_\_\_

Other relative \_\_\_\_\_

(Specify) \_\_\_\_\_

Other person \_\_\_\_\_

(Specify) \_\_\_\_\_

Child unaccompanied \_\_\_\_\_

Col. 51

1

2

3

4

0

2. Is the Parental Questionnaire to hand for reference?

Yes \_\_\_\_\_

No \_\_\_\_\_

Col. 52

1

2

3. CHILD'S HEIGHT, without shoes, to nearest inch \_\_\_\_\_  
(e.g., for  $48\frac{1}{2}$  inches, enter  $\boxed{4} \boxed{9}$ ).If unable to measure, enter  $\boxed{0} \boxed{0}$  and state reason \_\_\_\_\_

Col. 53 - 54

--	--

(b) A few areas have been issued with pocket stadiometers. If issued with a stadiometer, CHILD'S HEIGHT, without shoes, to nearest centimeter \_\_\_\_\_

(e.g. for 126 cms. enter  $\boxed{1} \boxed{2} \boxed{6}$ ).If not used, enter  $\boxed{0} \boxed{0} \boxed{0}$ .

Col. 55 - 56 - 57

--	--	--

4. CHILD'S WEIGHT, in underclothes, to nearest pound \_\_\_\_\_  
(e.g. for  $53\frac{1}{2}$  lb. enter  $\boxed{5} \boxed{4}$ ).If unable to weigh, enter  $\boxed{0} \boxed{0}$  and state reason \_\_\_\_\_

Col. 58 - 59

--	--

5. HEAD CIRCUMFERENCE, to nearest 0.5 inch \_\_\_\_\_  
(e.g. for 20 $\frac{1}{2}$  inches enter  $\boxed{2} \boxed{0} \cdot \boxed{5}$ ).If unable to measure, enter  $\boxed{0} \boxed{0} \cdot \boxed{0}$  and state reason \_\_\_\_\_

Col. 60 - 61 - 62

--	--	--

4

## MEDICAL HISTORY

## 6. GENERAL

- (a) Has the child, to the mother's knowledge, any physical handicap or disabling condition?

No	Yes	Don't know
2	1	0

Specify \_\_\_\_\_

- (b) Does the mother consider the child to be particularly sensitive or highly strung?

No	Yes	Don't know
2	1	0

Specify \_\_\_\_\_

## 7. EAR, NOSE AND THROAT

- (a) Has the child had more than 3 throat and/or ear infections (with fever) in the past year?

2	1	0
---	---	---

Has the child ever had:

- (b) Hay fever or sneezing attacks—

2	1	0
---	---	---

- (c) Habitual snoring or mouth breathing—

2	1	0
---	---	---

- (d) Running ears (i.e. pus, not wax)—

2	1	0
---	---	---

No. of times in past 12 mths. \_\_\_\_\_

- (e) Earache, without running ears—

2	1	0
---	---	---

No. of times in past 12 mths. \_\_\_\_\_

- (f) Hearing difficulty (suspected or confirmed)—

2	1	0
---	---	---

Specify \_\_\_\_\_ Age \_\_\_\_\_

Present now? \_\_\_\_\_

- (g) Other ear trouble—

2	1	0
---	---	---

Specify \_\_\_\_\_

## 8. RESPIRATORY SYSTEM

Has the child ever had:

- (a) Attacks of asthma—

2	1	0
---	---	---

No. of times in all \_\_\_\_\_

No. of times in past 12 mths. \_\_\_\_\_

- (b) Bronchitis with wheezing—

2	1	0
---	---	---

No. of times in past 12 mths. \_\_\_\_\_

- (c) Pneumonia—

2	1	0
---	---	---

At what age? \_\_\_\_\_

- (d) Other respiratory disease—

2	1	0
---	---	---

Specify \_\_\_\_\_

## 9. C.V.S.

Has the child had:

- (a) Rheumatic fever—

2	1	0
---	---	---

At what age? \_\_\_\_\_

- (b) Chorea (St. Vitus' Dance)—

2	1	0
---	---	---

At what age? \_\_\_\_\_

- (c) Congenital heart condition—

2	1	0
---	---	---

Specify \_\_\_\_\_

- (d) Parent, brother or sister with congenital heart condition—

2	1	0
---	---	---

Specify \_\_\_\_\_

5

## MEDICAL EXAMINATION

## 10. GENERAL

	No	Yes	Don't know	
Is there a major handicapping or disfiguring condition?— (e.g. mongolism, blindness, deafness, cerebral palsy, hydrocephalus, mental retardation, etc.)	2	1	0	Col. 63

Specify \_\_\_\_\_

## 11. E.N.T. AND MOUTH

Does examination reveal:

(a) Nasal obstruction—	2	1	0	Col. 64
------------------------	---	---	---	---------

Specify \_\_\_\_\_

(b) Nasal or postnasal discharge—	2	1	0	Col. 65
-----------------------------------	---	---	---	---------

Specify \_\_\_\_\_

(c) Tonsils worthy of comment—	2	1	0	Col. 66
--------------------------------	---	---	---	---------

Comment \_\_\_\_\_

(d) Mouth or palate abnormality—	2	1	0	Col. 67
----------------------------------	---	---	---	---------

Specify \_\_\_\_\_

(e) Please add up total missing, filled and carious teeth— (e.g. for 7 enter 0 7 )	Col. 68-69			
---	------------	--	--	--

(f) Have any permanent incisors appeared?—	2	1	0	Col. 70
--	---	---	---	---------

(g) Enlarged cervical glands—	2	1	0	Col. 71
-------------------------------	---	---	---	---------

Specify \_\_\_\_\_

(h) Signs of past or present otitis media (if drum obscured, ring "0")	2	1	0	Col. 72
--	---	---	---	---------

Specify \_\_\_\_\_

(i) Deformity of external ear—	2	1	0	Col. 73
--------------------------------	---	---	---	---------

Specify R. or L. \_\_\_\_\_

(j) Other ear condition—	2	1	0	Col. 74
--------------------------	---	---	---	---------

Specify \_\_\_\_\_

## 12. R.S.

(a) Abnormal signs in lungs—	2	1	0	Col. 75
------------------------------	---	---	---	---------

Specify \_\_\_\_\_

(b) Abnormal chest shape—	2	1	0	Col. 76
---------------------------	---	---	---	---------

Specify \_\_\_\_\_

(a) Other respiratory condition—	2	1	0	Col. 77
----------------------------------	---	---	---	---------

Specify \_\_\_\_\_

## 13. C.V.S.

(a) Pathological heart condition—	2	1	0	Col. 78
-----------------------------------	---	---	---	---------

Specify \_\_\_\_\_

(b) Other heart murmur—	2	1	0	Col. 79
-------------------------	---	---	---	---------

Specify \_\_\_\_\_

(c) Any other sign of heart disease (e.g. clubbing, cyanosis, etc.)—	2	1	0	Col. 80
---	---	---	---	---------

Specify \_\_\_\_\_

6

## MEDICAL HISTORY

## 14. ALIMENTARY AND UROGENITAL SYSTEMS

Has the child ever been/or had:	No	Yes	Don't know
(a) Periodic vomiting or bilious attacks	2	1	0
(b) Periodic abdominal pain	2	1	0
(c) Recurrent mouth ulcers	2	1	0
(d) Hernia of any sort	2	1	0
(e) Other serious digestive, bowel or alimentary disorder	2	1	0
(f) Infection in the urine (requiring medical treatment)	2	1	0
(g) Wet by day after 3 years of age (Ignore occasional mishaps)	2	1	0
(h) Wet by night after 5 years of age (Ignore occasional mishaps)	2	1	0
(i) Soiled by day after 4 years of age (Ignore occasional mishaps)	2	1	0
(j) Nephritis or other kidney or U-G disorder	2	1	0
(k) Parent, brother or sister with disorder of alimentary or U-G tract	2	1	0

No. of times in past 12 mths. ....

No. of times in past 12 mths. ....

Site .....

Specify .....

No. of times in all  
No. of times in past 12 mths. ....

How often in past 12 mths. ....

How often in past 12 mths. ....

How often in past 12 mths. ....

Specify .....

Age .....

Specify .....

## 15. METABOLISM AND BLOOD

Is there a history of:

(a) Sugar diabetes	2	1	0
(b) Any diabetes in parents, brothers or sisters	2	1	0
(c) Any thyroid, pituitary or adrenal gland disorder	2	1	0
(d) Any blood disorder	2	1	0

Age of onset .....

Specify .....

Specify .....

Specify .....

## 16. SKIN

Is there a history of:

(a) Eczema in the first year	2	1	0
(b) Eczema after the first year	2	1	0
(c) "Strawberry marks" (raised vascular naevi)	2	1	0
(d) "Port wine stains" (flat vascular naevi)	2	1	0
(e) Other skin condition, including hair or nail disorder	2	1	0

Month of onset .....

Sites .....

Any present now?  
Sites .....Age  
Site .....Age  
Site .....

Specify .....

For Office  
use only

Card No.

6

Col. 1

Col.

2	3	4	5	6	7	8	9	10	

Col. 11

## MEDICAL EXAMINATION

## 17. ALIMENTARY AND UROGENITAL SYSTEMS

On examination, has the child:

	No	Yes	Don't know		
(a) Inguinal hernia	2	1	0	Col. 12	R. or L.
(b) Other hernia	2	1	0	Col. 13	Specify
(c) Urinary incontinence	2	1	0	Col. 14	
(d) <i>For girls, ring "O"</i> Partially or undescended testes	2	1	0	Col. 15	Specify R. or L. (count retractile testes as normal)
(e) Been circumcised	2	1	0	Col. 16	
(f) Other U-G abnormality	2	1	0	Col. 17	Specify
(g) Other abdominal abnormality	2	1	0	Col. 18	Specify

## 18. SKIN, BLOOD, Etc.

On examination is there:

	No	Yes	Don't know		
(a) Bruising or petechiae	2	1	0	Col. 19	Specify
(c) Any lymph gland enlargement	2	1	0	Col. 20	Specify
(c) Eczema	2	1	0	Col. 21	Sites Severity
(d) Birthmarks	2	1	0	Col. 22	Sites
(e) Other skin condition, including hair or nail disorder	2	1	0	Col. 23	Specify

## 19. URISTIX URINE TEST

Instructions:

(1) Dip test end of strip in urine and remove immediately.

	Negative (yellow)	Trace	Positive (green)	Don't know or not tested	
(2) Compare colour of tip with protein colour chart at once	1	2	3	0	Col. 24

	Negative (red)	Positive (purple)	Don't know or not tested	
(3) Observe colour of band (glucose) after 10 seconds	1	2	0	Col. 25

8

## MEDICAL HISTORY

## 20. C.N.S. and SKELETAL SYSTEM

Has the child had:

	No	Yes	Don't know
(a) A fit or convulsion in the first year of life	2	1	0
(b) A fit or convulsion after the first year	2	1	0
(c) Petit mal or "blank spells"	2	1	0
(d) Frequent headaches or migraine	2	1	0
(e) Travel Sickness	2	1	0
(f) Tics or habit spasms	2	1	0
(g) Breath holding, head banging or "rocking"	2	1	0
(h) Concussion or head injury (with unconsciousness)	2	1	0
(i) Unusual size or shape of skull	2	1	0
(j) Any spinal trouble	2	1	0
(k) Congenital dislocation of hip	2	1	0
(l) Talipes	2	1	0
(m) Any fractures	2	1	0
(n) Any other bone or joint disorder	2	1	0
(o) Has any parent, brother or sister had a fit or convulsion	2	1	0

How many in first year

Age at first fit

No. of times in past 12 mths.

Total No. of fits

Age at onset

No. of times last year

Any drug treatment for conditions (a), (b), (c)?

No. of times in past 12 mths.

Age

Specify

Any in past 12 mths?

Specify

At what age?

Specify

Age

Specify

Specify

R. or L. or both?

Specify type

R. or L. or both

Site(s)

Age(s)

Specify

Specify

## 21. LATERALITY

Does the mother think the child is:

Right-handed	Left-handed	Mixed R. and L.	Don't know
1	2	3	0

## 22. VISION

Has the child ever had:

	No	Yes	Don't know
(a) Squint or suspected squint	2	1	0
(b) Any other eye trouble	2	1	0
(c) Have glasses been prescribed?	2	1	0

Specify

Age

Present now?

Specify

At what age?

Reason

## MEDICAL EXAMINATION

## 23. C.N.S. AND SKELETAL

On examination is there:

(a) Cerebral palsy—

Col. 26
1
2
3
4
5
6
7
8
9
X

- No.  
 —Spastic all four limbs.  
 —Spastic hemiplegia.  
 —Spastic monoplegia—upper limb.  
 —Spastic monoplegia—lower limb.  
 —Spastic both upper limbs.  
 —Spastic both lower limbs.  
 —Athetosis and spasticity.  
 —Athetosis alone.  
 —Other (Specify)

(b) Tics or habit spasms—

No	Yes	Don't know
----	-----	------------

2	1	0
---	---	---

Col. 27

Specify

(c) Congenital upper limb defect (check symmetry of hands)—

2	1	0
---	---	---

Col. 28

Specify

(d) Any malfunction of upper limb—

2	1	0
---	---	---

Col. 29

Specify

(When shown how, the child should be able to rotate the wrists rapidly clockwise and anti-clockwise, each hand separately and both together, and with the eyes closed, touch the nose with each forefinger.)

(e) Skull deformity—

2	1	0
---	---	---

Col. 30

Specify

(f) Spina bifida—

2	1	0
---	---	---

Col. 31

Specify

(g) Other spinal disorder—

2	1	0
---	---	---

Col. 32

Specify

(h) Congenital lower limb defect (Check symmetry effect)—

2	1	0
---	---	---

Col. 33

Specify

(i) Talipes—

2	1	0
---	---	---

Col. 34

Type

R. or L. or both

(j) Any malfunction of lower limb—

2	1	0
---	---	---

Col. 35

Specify

(When shown how, the child should be able to walk on the toes, walk on the heels, jump up and down, and hop on either foot. Also, note any abnormal gait.)

(k) Other neurological or skeletal disorder—

2	1	0
---	---	---

Col. 36

Specify

## LATERALITY TESTS

Please ask the child to carry out these tasks, and observe which hand/foot/eye is used. If unable to test, score 0 and state reason at foot of page.

(a) Hand: Throw a crumpled paper ball.  
Draw a cross.

Only R. hand used—  
 Only L. hand used—  
 Both R. and L. hand used—  
 Could not test—

Col. 37

1

2

3

0

(b) Foot: Kick crumpled paper ball.  
Hop on one leg.

Only R. foot used—  
 Only L. foot used—  
 Both R. and L. foot used—  
 Could not test—

Col. 38

1

2

3

0

(c) Eye: Look through rolled paper tube.  
Look through hole in a card.

Only R. eye used—  
 Only L. eye used—  
 Both R. and L. eye used—  
 Could not test—

Col. 39

1

2

3

0

10

## VISION TEST

25. Notes: (1) Test at exactly 20 ft. with a standard Snellen chart of block capitals without serifs (i.e. **VX**, not **VX**).  
 (2) Hang the chart in a good light, level with the child's eyes, and free from glare.  
 (3) Please occlude the other eye efficiently without pressing on the eyeball.  
 (4) If the child does not know his letters and also gives an unsatisfactory response with the "E test", try again with the Snellen chart asking the child to "draw the letters in the air". If this fails, try a picture card.  
*(This order of procedure is recommended to avoid diagnosing a child with a spatio-visual difficulty as having a visual defect.)*

## RESULT

Without glasses

	$\frac{6}{6}$	$\frac{6}{9}$	$\frac{6}{12}$	$\frac{6}{18}$	$\frac{6}{24}$	$\frac{6}{36}$	$\frac{6}{60}$	$\frac{6}{\text{over 60 or blind}}$	Unable to test	Reason
(a) R. Eye	1	2	3	4	5	6	7	8	9	Col. 40

(b) L. Eye

	$\frac{6}{6}$	$\frac{6}{9}$	$\frac{6}{12}$	$\frac{6}{18}$	$\frac{6}{24}$	$\frac{6}{36}$	$\frac{6}{60}$	$\frac{6}{\text{over 60 or blind}}$	Unable to test	Reason
(b) L. Eye	1	2	3	4	5	6	7	8	9	Col. 41

With glasses  
*(If child doesn't wear glasses, score "0")*

	$\frac{6}{6}$	$\frac{6}{9}$	$\frac{6}{12}$	$\frac{6}{18}$	$\frac{6}{24}$	$\frac{6}{36}$	$\frac{6}{60}$	$\frac{6}{\text{over 60 or blind}}$	Unable to test	Reason	
(c) R. Eye	0	1	2	3	4	5	6	7	8	9	Col. 42

(d) L. Eye

	$\frac{6}{6}$	$\frac{6}{9}$	$\frac{6}{12}$	$\frac{6}{18}$	$\frac{6}{24}$	$\frac{6}{36}$	$\frac{6}{60}$	$\frac{6}{\text{over 60 or blind}}$	Unable to test	Reason	
(d) L. Eye	0	1	2	3	4	5	6	7	8	9	Col. 43

Is there evidence of:

	No	Yes	Don't know		
(e) Squint	2	1	0	Col. 44	Specify R. or L. Type

(f) Latent squint (cover test and "follow finger")

	No	Yes	Don't know		
(f) Latent squint (cover test and "follow finger")	2	1	0	Col. 45	Specify R. or L. Type

(g) Any other eye condition affecting vision

	No	Yes	Don't know		
(g) Any other eye condition affecting vision	2	1	0	Col. 46	Specify

(g) Any other eye condition not affecting vision

	No	Yes	Don't know		
(g) Any other eye condition not affecting vision	2	1	0	Col. 47	Specify

## (h) ASSESSMENT

	Col. 48
Normal vision	1
Visual defect but no handicap to normal schooling and everyday activities	2
Can manage ordinary school books only with difficulty	3
Requires special school books and/or special visual aids	4
Blind, or vision insufficient to use special school books	5
Don't know, or unable to assess	0
Reason	

11

## SPEECH TEST

26. Method: (1) Position the child close to, and facing you.  
 (2) Please explain that you would like the test sentences repeated after you.  
 (3) Use a natural voice and observe the child's face during the replies.  
 (4) The sentences may be repeated if necessary.  
 (5) Please underline any mispronounced words (dropped aitches may be ignored) and record the total at the end.

(If unable to test, score 9 9 and state reason \_\_\_\_\_)

- (a) Test sentences:

*Carol threaded a needle with wool.*  
*She mended her sister's frock.*  
*Roger grasped a bundle of sticks.*  
*Eating porridge gives him strength.*  
*My brother rode his bicycle to school.*  
*Phillip had scrambled eggs for breakfast.*

Total mispronounced words \_\_\_\_\_  
 (e.g. for 8 enter 0 8).

Col 49 - 50

- (b) Is there any stammer? \_\_\_\_\_

No	slight	moderate	severe	Don't know
1	2	3	4	0

Col 51

- (c) Assessment of intelligibility of speech:

Speech fully intelligible \_\_\_\_\_  
 Almost all words are intelligible \_\_\_\_\_  
 Many words are unintelligible \_\_\_\_\_  
 All or almost all words are unintelligible \_\_\_\_\_  
 Don't know or unable to test \_\_\_\_\_  
 (Reason) \_\_\_\_\_

Col 52

1  
2  
3  
4  
0

## HEARING TEST

27. Method: (1) Conditions should be reasonably quiet.  
 (2) Position the child 10 feet away, with the ear under test towards you and the child's finger occluding the other ear.  
 (3) Ask the child to repeat each test word after you.  
 (4) The words should be spoken in a quiet conversational voice (not whispered), giving plenty of time for each reply.  
 (5) Please underline incorrect responses and record the totals.  
 (6) The assistance of a second person is desirable to hear the replies.  
 (If unable to test, score X and state reason below.)

(a) Right Ear. Test words: shoes horse cart seat cup frock  
 cat bike face chick fish ship

Total incorrect responses \_\_\_\_\_  
 (If over 9, enter 9)

Col 53

(b) Left Ear. Test words: spoon ball star feet bus sock  
 hat knife cake pig dish ship

Total incorrect responses \_\_\_\_\_  
 (If over 9, enter 9)

Col 54

- (c) Assessment of hearing:

Normal hearing \_\_\_\_\_  
 Some impairment of hearing (include those corrected by wearing a hearing aid) \_\_\_\_\_  
 Understanding of speech impaired (even with a hearing aid) \_\_\_\_\_  
 Speech not understood, even with a hearing aid and raised voice \_\_\_\_\_  
 Don't know, or unable to test \_\_\_\_\_  
 Reason \_\_\_\_\_

Col 55

1  
2  
3  
4  
0

12

28. (a) Has the child been formally "ascertained as in need of special educational treatment"? (If uncertain about this or the following questions, please check with P.S.M.O.)

If "Yes", specify category:

No \_\_\_\_\_  
 Don't know \_\_\_\_\_  
 Blind \_\_\_\_\_  
 Partially sighted \_\_\_\_\_  
 Deaf \_\_\_\_\_  
 Partially hearing \_\_\_\_\_  
 Educationally subnormal \_\_\_\_\_  
 Epileptic \_\_\_\_\_  
 Maladjusted \_\_\_\_\_  
 Physically handicapped \_\_\_\_\_  
 Speech defect \_\_\_\_\_  
 Delicate \_\_\_\_\_

Col 56

1

0

2

3

4

5

6

7

8

9

X

Y

- (b) Is the child receiving special educational treatment in a special school? \_\_\_\_\_

No Yes Don't know

2 1 0

Col 57

If "Yes", specify for which handicap \_\_\_\_\_

- (c) Or in a special teaching unit? \_\_\_\_\_

2 1 0

Col 58

- (d) Is the child likely to be considered for a special school? \_\_\_\_\_

2 1 0

Col 59

29. Irrespective of local facilities, which of the following would you consider most suited to the child's educational needs?

Ordinary school \_\_\_\_\_  
 Ordinary school with remedial class or extra teaching help (for educational or mental backwardness, etc.) \_\_\_\_\_  
 Ordinary school with specially equipped teaching unit (for part sighted, part hearing, etc.) \_\_\_\_\_  
 Special school \_\_\_\_\_  
 Home tuition \_\_\_\_\_  
 Training centre (occupational centre) \_\_\_\_\_  
 No centre or school possible \_\_\_\_\_  
 Other \_\_\_\_\_  
 (Specify) \_\_\_\_\_  
 Insufficient information \_\_\_\_\_

Col 60

1

2

3

4

5

6

7

8

9

0

## 28. SUMMARY OF ABNORMAL CONDITIONS

- (i) Please record any abnormal conditions under the appropriate headings.  
 (Vision, speech and hearing have been assessed in their respective sections.)  
 (ii) If any condition is not a handicap to ordinary schooling ring "2".  
 (iii) If any condition might handicap the child in an ordinary school ring "3", "4" or "5", as applicable.

	Present but no Handicap						
	Degree of handicap						
	None	Slight	Moderate	Severe	Don't know		
(a) General motor handicap	1	2	3	4	5	0	Col. 61
(b) Disfiguring condition	1	2	3	4	5	0	Col. 62
(c) Mental retardation	1	2	3	4	5	0	Col. 63
(d) Emotional maladjustment	1	2	3	4	5	0	Col. 64
(e) Head and neck	1	2	3	4	5	0	Col. 65
(f) Upper limb	1	2	3	4	5	0	Col. 66
(g) Lower limb	1	2	3	4	5	0	Col. 67
(h) Spine	1	2	3	4	5	0	Col. 68
(i) Respiratory system	1	2	3	4	5	0	Col. 69
(j) Alimentary system	1	2	3	4	5	0	Col. 70
(k) Urogenital system	1	2	3	4	5	0	Col. 71
(l) Heart	1	2	3	4	5	0	Col. 72
(m) Blood, etc.	1	2	3	4	5	0	Col. 73
(n) Skin	1	2	3	4	5	0	Col. 74
(o) Epilepsy	1	2	3	4	5	0	Col. 75
(p) Other C.N.S. condition	1	2	3	4	5	0	Col. 76
(q) Diabetes	1	2	3	4	5	0	Col. 77
(r) Any other conditions (Specify)	1	2	3	4	5	0	Col. 78

Please define any conditions recorded on this page

## END OF QUESTIONNAIRE

Would the medical examiner please thank the mother, if she is present, and glance over the questionnaire to check that:

- (i) only one number in each box has been ringed;  
 and (ii) no question has been left unanswered (except, where appropriate, the medical history questions on pages 4, 6, 8).

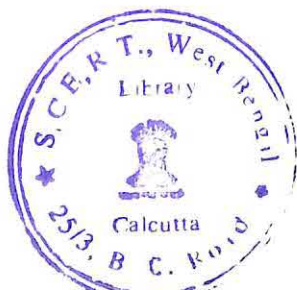
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☐

Col. 79

☐

Col. 80













# Studies in Child Development

This series of books, published by Longmans in association with the National Bureau for Co-operation in Child Care, has a twofold object: to make the results of research available to the public as rapidly as possible; and to disseminate, with a minimum of technical jargon, research findings concerned with the development and needs of children.

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